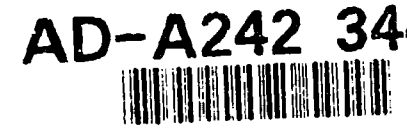


TACTICAL FIGHTER EMPLOYMENT: THE OPTIMUM ROLE IN CONTINGENCY OPERATIONS

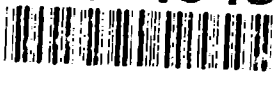
A thesis presented to the Faculty of the U.S. Army Command and General Staff College in partial fulfillment of the requirements for the degree

MASTER OF MILITARY ART AND SCIENCE

by

MICHAEL A. SNODGRASS, MAJOR, USAF
B.S., USAF Academy, Colorado Springs, Colorado, 1978

Fort Leavenworth, Kansas
1991



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The study examines the *Mayaguez* Incident, the Israeli raid on Tunisia, the U.S. Navy's attack on Syrian anti-aircraft positions and Operation El Dorado Canyon. Each case study is examined, analyzed and rated in each of the nine areas. Mission results are attributed to success or failure in specific areas within in a matrix. The nine areas addressed are: Intelligence, Force Availability, Threat, Collateral Damage, Objective, Time, Air Superiority, Surprise and Risk.

The results provide a deeper understanding of the requirements for tactical fighter employment in Contingency Operations. Tactical airpower strikes fast, over long distances and with massive destructive power. However, it cannot hold territory or rescue hostages. The use of tactical airpower is also a strong signal, involving U.S. prestige and power. When used optimally, tactical airpower is a potent arm of the military element of power.

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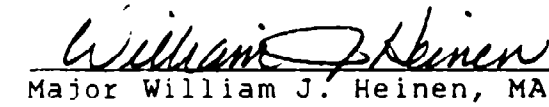

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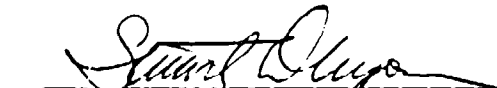

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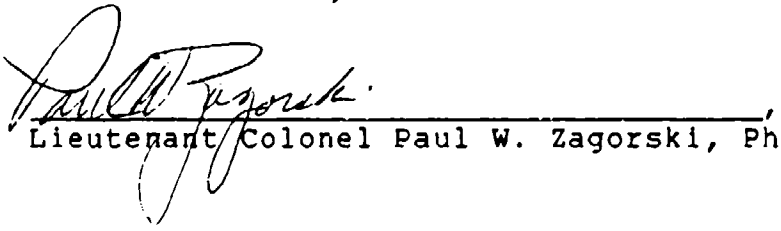

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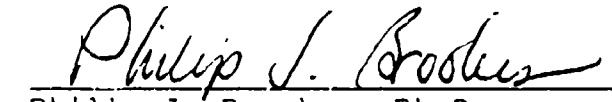

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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other government agency. (References to this study should include the foregoing statement.)

ABSTRACT

TACTICAL FIGHTER EMPLOYMENT: THE OPTIMUM ROLE IN CONTINGENCY OPERATIONS by MAJ Michael A. Snodgrass, USAF, 139 pages.

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CHAPTER ONE

TACTICAL AIRPOWER IN LOW INTENSITY CONFLICT

If we lose the war in the air we lose the war and lose it quickly.

-Field Marshall Montgomery

For the past 20 years, the United States and other nations have been involved in a number of limited conflicts where tactical airpower was, or may have been used. These situations range from the fly-bys in support of Ms. Corizon Aquino by F-4E fighters in December 1989 to the El Dorado Canyon attack on Libya on 15 April 1986. In several other engagements by other nations, for instance the Israeli raid in Tunisia in September 1985, the application of conventional airpower to achieve national objectives seemed successful. However, the U.S. Navy's attack on anti-aircraft sights in Lebanon was considered by many to be a failure. The death of one pilot and the loss of two aircraft, the fact the targets were relocated immediately after the air attacks and subsequently taken out by naval gunfire substantiates that conclusion.[1]

The purpose of this thesis is to determine if an optimum concept of employment, or optimum conditions for the successful employment of tactical airpower, that is to say, tactical fighters, exists in peacetime contingency operations. By "optimum use of fighter aviation" we mean a certain set of conditions, the existence of which in a situation indicates fighter employment as a possible tool for the decision maker. The focus on tactical fighters, as opposed to tactical aviation as a whole, excludes such aircraft as B-52's, B-1's or AC-130's used in a tactical interdiction role. For the purposes of this paper, tactical aviation refers only to fighter aircraft and the optimum set of conditions for their effective employment.

If there is an optimum use for tactical aviation in responding to these situations, are there any limitations policy makers should be aware of which enhance or detract from the use of these forces?

This author's experiences on a Unified Command Component Commander's personal staff, discussions with pilots throughout the Tactical Air Forces (TAF) and from over 2000 hours of flying time in fighter aircraft is that our capabilities to employ various aspects of fighter aviation have changed considerably in the past 20 years. Consequently, the decision makers' ability to grasp all potential capabilities of today's tactical fighters may be limited by his most recent experience employing modern aircraft, assuming he is an aviator. Without the most

recent tactical developments available in their decision making process, a decision maker may not have all the data required to make informed decisions. In addition, the constant evolution of tactics, that is, how we approach and solve a problem, is a rapid process. Senior leaders cannot be expected to know every possible alternative in a given scenario, possibly precluding them from making an informed decision.

TACTICAL AIRPOWER'S HISTORICAL USE

Without doubt, precedent exists for the use of tactical airpower in Low Intensity Conflict (LIC), or more precisely, Contingency Operations (CO). Several examples of tactical fighter employment in contingency operations exist. 1) The French use of tactical airpower in the Moroccan-Polisario conflict in December 1979. 2) The U.S. Navy interception and force down of an Egyptian Airliner suspected of carrying the PLO terrorists responsible for the Achille Lauro seizure. 3) The Israeli attack on the Bagdad nuclear reactor and the examples listed above clearly indicate conventional fighters are capable of conducting Contingency Operations.

The more important question, and the question for this thesis is: Are there optimum conditions under which tactical fighters are best employed? The logical follow on question is then, what are those conditions? By comparing several historical examples, this paper identifies those

conditions under which tactical fighters may be employed, optimally, to take advantage of the inherent strengths of fighter aviation.

There are many scenarios where tactical airpower may not be the best answer, and other forces should be used instead. As discussed in Chapter Two, confusion exists over which forces to employ, in part, due to the evolution of the term "Low Intensity Conflict" and its habitual association with Special Operations Forces (SOF).

Current emphasis in Congress and writings by many military and non-military authors call for using SOF, not jet fighters, to resolve Low Intensity Conflict (LIC) situations or demonstrate U.S. resolve. Congress has contributed to the emphasis on SOF by giving the Special Operations Command (SOCOM) separate budget authority within the DOD budget. In addition, government officials like Mr. R. Lynn Rylander, Deputy Director for Special Planning, Office of the Assistant Secretary of Defense for International Security Affairs, seem to ignore the capabilities of tactical airpower. Speaking to the Ninth Airpower Symposium at Maxwell Air Force Base in March 1985, Mr. Rylander did not address tactical airpower as a possible tool for the decision maker. In his words, SOF is the bridge between "...peaceful competition (between nations) and more violent forms of conflict."[2] Although this definition of SOF's role fits neatly into the notion conventional forces should be used for well defined forms of

conflict, it ignores the fact SOF, specifically the force structure commonly associated with SOF, has certain limitations.

LIMITATIONS OF SOF

The limitations of SOF, specifically the USAF contribution to SOCOM include firepower, speed, self-protection capability and range. These limitations are the result of hardware. The types of aircraft used by SOF are designed for missions required by the special operations mission, not necessarily the tactical aviation missions.

The AC-130 is a very capable platform, accurately delivering 20mm, 40mm and 105mm ordnance on targets day or night in clear air mass conditions. However, the AC-130's ability to destroy a command and control facility or any semi-hardened building is limited in comparison with a flight of F-16's or F-111's loaded with 2000 pound bombs. Clearly, a fighter's ability to deliver massive firepower outweighs the AC-130's. If the targets are "soft," and other conditions such as complete air superiority are not met, the AC-130's ability to precisely strike a target, repeatedly, with minimum collateral damage is a definite advantage. But if the requirement is for massive firepower, tactical fighters are a better choice. A flight of 8 F-16's loaded with 2000 pound bombs can deliver 32 tons of high explosive in minutes.

Another limitation of our helicopter and gunship force is its slow speed. The extreme slow speed of these

systems makes them more vulnerable to attack because they cannot out- maneuver the threat, and they must spend a much longer time in the threat's engagement envelope (the area where the threat can effectively fire weapons at the target). Also, the slow speed of SOF aircraft limits their ability to reach targets in a reasonable time. At 200 Knots Indicated Airspeed (KIAS), a C-130 (or any aircraft, for that matter) will take approximately 7 hours to travel 2000 nautical miles (nm), using an average ground speed of 260 knots. Flying at 480 knots, tactical fighters can cover this distance in just over 4 hours. Not only can the jets respond quicker, but the pilots will most likely be less fatigued when they arrive on target because they have flown for a shorter time period.

Speed also contributes to self protection capability. In a hostile environment, a quick ingress to the target, attack and egress from the area by fighters severely limits enemy air defense artillery reaction time. If enemy fighters are deployed, tactical airpower has proven self defense capability to deal with the threat. Our AC-130 and helicopter forces depend on either air superiority, surprise or remaining out of the range of enemy small arms fire for their survival. Since obtaining air superiority often precludes surprise, and the position of small arms and anti-aircraft artillery units can rarely be known with absolute accuracy, self-protection cannot be ignored. In addition, the ten year period between 1972 and 1982 resulted

in the developing world purchasing approximately 6,630 supersonic fighters, 2,070 subsonic attack aircraft, 35,735 Surface-to-Air Missiles (SAMs) and over 6,000 Anti-Aircraft Artillery (AAA) pieces.[3] There is nothing to indicate this trend will subside in the future. In fact, as the world becomes more multi-polar, as in the Middle East, nations will naturally tend to their own defense. Obviously, proliferation of these systems may easily result in organizations like the PLO obtaining more and more air defense assets, in particular shoulder fired SAMs like the Soviet made SA-7 (similar to the U.S. built Redeye), increasing the threat to any aircraft, SOF, or fighter.

The lack of speed in SOF assets results in their most important limitation. SOF assets are limited by the range they can travel to reach a target area. Even for forward deployed forces, long distances to potential targets are common. The flight from the United Kingdom to Libya took the F-111 force package over seven hours.[4] A force of AC-130s using the same routing would take almost 13 hours to reach the target. Even with supplemental crews, which is difficult to do in the AC-130 because of the limited space available, aircrew fatigue would be a severe limitation.

DEFINITIONS

Significant stumbling blocks to the study of Contingency Operations and Low Intensity Conflict are the definitions used to describe the type of operations

conducted. For example, FM 100-5 describes LIC as operations against irregular or unconventional forces, while FM 100-20/AFM 2-20 discusses LIC in terms of the indirect contribution played by the Army. Quite accurately, FM 100-20 also states that LIC is an ambiguous environment which may also include direct actions.[5] A full description of the historical evolution of the term LIC is in chapter two. Inserting another twist on the definitional debate would prove fruitless and time consuming. The important point to note is the definition of Contingency Operations (CO) has risen from discussions for over two decades. It is these operations where tactical fighters may have their greatest utility.

> Low Intensity Conflict: A form of warfare below mid and high-intensity conflict which pits U.S. conventional forces against regular or unconventional forces. LIC normally does not include Army echelons above division or Air Force echelons above squadron.

In his article for the Military Review in September 1988, Professor Sam C. Sarkesian, one of the most often quoted scholars on LIC, defines the conflict spectrum from non-combat to nuclear war as:

[6]

CONFLICT SPECTRUM

NON-COMBAT	UNCONVENTIONAL	CONFLICT	CONVENTIONAL WAR	NUCLEAR WAR
Shows of Force Military Asst.	Special Operations	LIC Revolution Counter-revolution	Limited Major	Limited Major

<-----Low----------Conflict Intensity----------High------->
<----High----------Conflict Probability----------Low------->

A more precise definition of LIC is contained in FM 100-20/AFM 2-20:

> Low Intensity Conflict is a political-military confrontation between contending states or groups below conventional war and above the routine, peaceful competition among states. It frequently involves protracted struggles of competing principles and ideologies. Low Intensity Conflict ranges from subversion to the use of armed force. It is waged by a combination of means, employing political, economic, informational, and military instruments. Low Intensity Conflicts are often localized, generally in the Third World, but contain regional and global security implications.

The definition of LIC is critical, because from it comes the basis for force employment required to answer the question: "What are our forces doing?" The most recent framework established to answer this question regarding conventional airpower are the four categories of LIC outlined in FM 100-20. These categories are:

-Support for insurgency and counterinsurgency

-Combating terrorism

-Peacekeeping operations

-Peacetime contingency operations (PCO)

FM 100-20 also discusses five LIC imperatives which impact the success of LIC operations: Political Dominance, Unity of Effort, Adaptability, Legitimacy and Perseverance. Political dominance means operational commanders must remember the political objectives which are driving military decisions and the impact of military operations on the objectives. Operations are not conducted for their own sake, but to accomplish a specific political goal. Unity of

effort implies commanders must integrate their efforts with other agencies involved in the situation. Integration not only minimizes duplication of effort, but may serve a mutual advantage by streamlining operations. Adaptability in LIC is the ability and the desire to alter traditional ways of accomplishing goals in response to the particular requirements of the situation. The use of force by a nation in defense of its interests is legitimate because nations have a duty to protect their people and territory. Legitimacy includes all actions a government takes to make and enforce its decisions. Finally, perseverance is the pursuit of those national objectives until they are achieved. FM 100-20 points out success in LIC may not come easily or quickly.

These imperatives set the current framework for LIC operations. The subject of this thesis is the use of one aspect of military power, tactical fighter aviation, in one aspect of LIC, Contingency Operations. (Note: Until recently, Contingency Operations were referred to as Peacetime Contingency Operations. The mission is the same.)

It is under the definition of PCO where employment of tactical airpower best fits.

Peacetime Contingency Operations/Contingency Operations:

> According to FM 100-20: "PCO/CO include such diverse actions as disaster relief, certain types of counter-drug operations, and land, sea and air strikes. The unifying feature of these actions is the rapid mobilization of effort to focus on a specific problem, usually in a crisis and guided, at the national level, by the crisis action system. Frequently, these

operations take place away from customary facilities, requiring deep penetration and temporary establishment of long lines of communication (LOC) in a hostile environment. Peacetime contingency operations may require the exercise of restraint and the selective use of force or concentrated violent actions."

The role of tactical airpower in these raids is the focus of this study. PCO falls into the narrow gap left in Professor Sarkesian's definition of LIC between non-combat and conventional war.

In their monograph titled Operational Considerations for Military Involvement in Low Intensity Conflict, Major Charles Ayers and Lt. Col. Kenneth Brothers further distinguish PCO as involving the "...orientation on a specific center of gravity and the intention to deal with that center of gravity with a single stroke. These characteristics normally require: tailored forces, short duration and joint/combined operations."

> **Limited Conflict:** A scenario which is limited in scope and/or time but finds U.S. forces engaged with regular forces of a nation. The scope limitations for LIC apply. However, Limited Conflict includes operations above the division/squadron level of short duration.

Research into the definition of LIC and CO have led to the above definition of Limited Conflict. The limitation on force structure is logical in the context of many articles and debates on the use of force in LIC. FM 100-20 does not include a definition of limited conflict, but use of the term in current literature requires the limits on limited conflict be defined. Operation Just Cause may be considered a limited conflict due to the limited time U.S.

forces spent actually fighting, however intense the actual combat may have been for the participants. Just Cause was very limited from the fighter standpoint, with only two F-117As employed.

> **Counterinsurgency:** From FM 100-20: Direct or indirect application of military force against insurgent groups, in support of the legitimate government. These operations may be low intensity or limited in scope or duration, but may have as a subset strikes or raids which fit the definition of PCO.

Often, counter insurgency operations involve locating and destroying unconventional forces dispersed in tropical or mountainous areas. The inability of tactical airpower, not to locate or destroy these forces but to *distinguish* between counter insurgents and non-belligerents causes many theorists to dismiss fighter assets as a viable force in LIC.[7] Obviously, PCO and counterinsurgency operations have overlapping definitions. Although fighters may have only a very limited application in counterinsurgency operations, ignoring their capabilities in all LIC operations needlessly excludes tactical aviation from employment in LIC PCO/CO.

The following definitions are terms used to describe differing types of force or support capabilities required by tactical fighter employment. They are common language among fighter pilots, and used here in context.

> **Conventional Force:** When discussing airpower, the use of non-nuclear munitions.

> **Tactical Airpower:** Fighter aircraft capable of either ground attack, air combat or both.

Fighter Squadron: A combat unit consisting of 24 aircraft. The fighter squadron is the basic deployment unit. If forces deploy to a forward operating location, the number of squadrons at a given base is limited by the base facilities available.

Flight: A group of 2 or 4 fighter aircraft operating as a single entity with the same mission. Although different aircraft may have specific duties prioritized, each contributes to mission accomplishment.

Element: A group of only 2 fighters operating as a single entity. Occasionally referred to as a flight.

Intelligence: Intelligence is information on the enemy, either strategic or tactical. Strategic intelligence is information on the enemy's aims, goals, capabilities, weaknesses, resources and possible courses of action. Tactical intelligence may include items of strategic intelligence, but must include information necessary for mission accomplishment. Specific location of targets, enemy defenses, orders of battle, doctrine, reaction times, and geography are examples of tactical intelligence. Without accurate intelligence at both levels, mission accomplishment is highly doubtful.

Surgical Strike: Generally, users of the term "surgical strike" mean to imply the destruction of a target by tactical aviation with "surgical" precision. In other words, destroying a target without damaging nearby facilities or personnel.

The goal of a surgical strike is to destroy the target while leaving nearby facilities and personnel undamaged, much as a surgeon removes an organ. Historically, bombing missions have always involved the risk of collateral damage. In WWII, air raids over Germany and Britain resulted in civilian casualties even when the targets were purely military and not aimed at the civilian population. Minimizing collateral damage is always desired. However, removal of an appendix without damage to

surrounding tissue or organs is a poor analogy for the use of high explosive ordnance to destroy a building or bridge. Concentration on surgical strikes is a result of American society's desire to have a clear conscience while at the same time showing our military might; but displays ignorance of the dynamics involved with employing high explosive ordnance from aircraft often as far away as a mile in range. Inaccuracies in systems, explosions from materials stored inside the target, as well as aiming errors by aircrew may result in collateral damage. Although desired, surgical precision is achievable only when the target is relatively isolated from other facilities. The isolation required is normally at least one half of a mile.

> **Raid:** According to JCS Pub 1-02, a raid is an operation, usually small scale, involving a swift penetration of hostile territory to secure information, confuse the enemy, or to destroy his installations. It ends with a planned withdrawal on completion of the assigned mission.

> **Smart Munitions:** These weapons are able to discriminate between targets and non-targets, or hit a precise aimpoint on a target due to the guidance systems used to direct the weapon after it is released from the aircraft.

Munitions in the "smart" category include Maverick air-to- ground missiles, laser guided bombs and TV guided weapons. All require clear air mass conditions for accurate employment and can hit precise aimpoints when properly used. Although not a panacea, smart weapons offer the advantage of standoff from threats along with accuracy.

LIMITATIONS

Several limitations exist. In studying the historical use of conventional airpower, it is impossible to determine the thought processes of the planners and decision makers involved. The actual planners names are not recorded, nor are there catalogs of materials used by them to reach their solution. In addition, the ultimate decision maker is often the President. Reaching either of these groups for personal interviews is very difficult. (The only exception is Operation Just Cause. Background interviews with the SouthAF staff aided research and thought processes on this project as well as some insight into the decision making process.)[8]

Although the media contains a wealth of data on the use of military power in such places as Grenada and the Middle East, often the information is inaccurate. The Israelis are known to be especially secretive of their concepts of employment and planning processes.

An additional constraint is either incomplete or inaccurate understanding by the writer. A reporter is only able to report the facts as he/she understands them. Lack of knowledge by the media on the subject's specifics may well dilute or completely change the actual story. Finally, deliberate mis-information by government sources to protect capabilities from exploitation may lessen accuracy.
A third limitation is the classification of most after action reports by the government. For example, the report

on El Dorado Canyon is classified, due to the sensitive nature of the mission, but also contains useful data for this study.

Because this study is focused on the application of conventional airpower in today's world, I will not include lessons from operations conducted prior to 1960 unless they are verified by operations since that time. Lessons learned prior to 1960 may be applicable to modern warfare, and can validate some procedures or doctrine. The modern age of jet fighters began in the early 1960's with the deployment of the F-4 Phantom II. Although delivery systems and navigation capabilities have markedly improved, the basic problems involved with high speed fighter employment, target acquisition and recognition, are unchanged.

In addition, this study will not focus on modern insurgencies which do not involve the use of modern command and control systems and the limitations therein. For example, the El Salvadoran Air Force (ESAF) has conducted counter insurgency operations for several years with A-37 and other aircraft. On a visit to the ESAF in 1989, this author learned their command and control system is so rudimentary and different from ours that a valid comparison cannot be made.

The final delimitation is the manner this study addresses the concept of risk. The risk to the operation is discussed in terms of the chances for success or failure of the mission. Another risk would be the risk the mission,

though successful, does not accomplish the objectives as outlined by the National Command Authority (NCA). The determination of the latter risk is the purview of the decision maker, given the odds for success of the military objectives. Military operations are carried out to secure territory, protect lives, display determination or will, retaliate for some previous act or change the behavior of the object of the operation. The risk discussed in chapter three is the risk of failure to accomplish the military objective only. Whether or not the decision maker targeted will change his behavior is a judgment beyond the scope of this study.

WHY STUDY TACTICAL AVIATION IN PCO?

The study of an optimal employment scenario for tactical aviation in PCO is important in order to define more precisely what force structure is required in the future as well as how current forces may be employed. Tactical airpower has been used in PCO, but with varying amounts of success. By considering the lessons of the past in light of capabilities in modern air forces, decision makers will be able to employ the military in ways maximizing effectiveness, at minimum risk of failure. The random, unjustified use of power is anathema to our society, but when justified by events, often the use of force is supported. The key ingredient is finding the correct amount and type of force to use.

By it's very nature, the use of modern jet fighters is a strong signal of U.S. resolve. The first units deployed during operation Desert Shield were F-15 squadrons from Langley AFB, VA. When the government commits forces to a mission, the type of forces employed sends a signal to friend and potential enemy alike as to the level of concern held by the President.

The use of tactical aviation in LIC is not widely accepted either. In his book The Air Force Role in Low Intensity Conflict, Lt. Colonel David Dean points out this view. According to Dean, the use of fighters in limited conflict scenarios has been widely discounted in academic circles, even though the National Command Authority continues to employ fighters when needed.[9] One reason is the perception an entire squadron of fighters must be deployed to an area for extended operations if they are to be employed. Clearly, this is at odds with the definition of contingency operations and part of the definitional debate on contingency operations helps clarify tactical aviation's role. Part of the problem, as seen in chapter two, is the evolution of the definition of LIC and the emergence of PCO/CO as an area leaders can catalog the use of force short of declared war. The term "peacetime contingency operations" allows decision makers to justify the use of force in Low Intensity Conflict, something early theorists could not do because the definitional framework did not exist.

The next step is to look at the optimal use of these elements of power, specifically tactical fighters in PCO, to determine which conditions must be met before committing forces to an operation.

After reviewing the evolution of the term Low Intensity Conflict in chapter 2, chapter 3 explains the nine factors to be considered when committing tactical fighters to raids in support of the national objectives. These factors are: Intelligence, Force Availability, Threat, Collateral Damage, Objective, Time, Air Superiority, Surprise and Risk. Defining and explaining how each factor affects the overall success of a mission facilitates their use in the four case studies in chapter 4.

The case studies examine each factor in light of the known information at the time of the mission as well as the outcome and the cost in terms of lives, international prestige and domestic popularity. The case studies include the capture of the USS *Mayaquez*, the Israeli raid on the Palestine Liberation Organizations headquarters in Tunisia, the U.S. Navy's attack on anti-aircraft artillery sites in Lebanon and the joint U.S. Air Force/Navy strike against Libya in 1986. Each case study is judged numerically in terms of it's adherence to the principles discussed in chapter 3. Where necessary, assumptions are made to fill in gaps or lack of data due to the nature of the operations.

Finally, chapter 5 discusses the lessons from the case studies in terms of the research question: Is there an

optimum set of conditions for the use of tactical fighters in Contingency Operations?

ENDNOTES

1 Commander Victor E. Dodds, "Naval Air Strike As A Response to State-Sponsored Terrorism", Unpublished, (USAF Air Command and Staff College, Maxwell Air Force Base, AL, 1986) 4-7.

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CHAPTER TWO

FROM LIC TO PCO: AN EVOLUTION OF TERMS

The beginning of wisdom is calling things by their right names.

-Confucius

The largest stumbling block to discussing the role of tactical airpower in Low Intensity Conflict, Peacetime Contingency Operations is the definition of the term Low Intensity Conflict. Over the past 20 years the term has been defined, re-defined and the subject of heated debate.

The precise definition of LIC and subsets of LIC such as CO is important. Defining roles and missions allows the services to delineate their responsibilities, train for their assigned tasks and ultimately, receive their part of the defense budget. Confusion over the correct definition of LIC and CO arises not only between the services but within the services, from experts in the field and from the Congress. In order for the services to fully prepare to accomplish their assigned missions and tasks, the roles assigned must be as clear and unequivocal as possible.

This chapter traces the evolution of the terms LIC and CO as well as terms like counterinsurgency (COIN) from 1970 to the present. Part of the evolution of the terms is as much a direct result of the healthy debate we are privileged to participate in as it is a search for roles and missions. This study does not attempt to discern the motivations of the authors, only to evaluate their contribution to the evolution of understanding.

The three phases outlined below do not exclude other, perhaps more precise divisions of the historical debate. Rather, the phases are a vehicle for understanding the broad issues concerning the evolution of the definitions we are working with today. Phase One is the period from 1970 to 1978 when the issue of Low Intensity Conflict was not handled separately from other issues such as the role of interdiction. In fact, LIC was packaged with other diverse roles like guerrilla warfare. During Phase Two, which lasted until 1985, scholars and military leaders began to question the role of the armed forces in LIC, trying to redefine the concept of LIC to more clearly describe what the services were doing as well as what they were capable of in the future. The final phase began with the Ninth Air University Symposium, held at Maxwell Air Force Base (AFB). In this phase, the definition of LIC, and the current definitions of missions within the LIC framework matured into their present form.

Reviewing the evolution of the terminology surrounding LIC is important from an historical standpoint. A great deal of confusion exists today primarily because of the many and varied definitions ascribed to LIC. By understanding the context of the definitional debate, attaining a firm understanding of the problem and therefore a clear view of current thought, LIC can be addressed without the confusion that has plagued the debate for so many years.

PHASE ONE: AVOIDING THE ISSUE 1970-1978

The end of America's role in the Vietnam War was slowly coming into view when scholars began to evaluate what had occurred and why. Vietnam was different in one major respect (from the point of view of defining Low Intensity Conflict): the enemy did not act like our previous enemies had in any conflict. The idea of attacking unconventional forces with regular troops proved to be difficult to put into practice. The U.S. by many accounts won most, if not all of the major battles, but lost the war. The services attempted to look into the future and see the shape of wars yet fought. One result was a study done by the USAF's Tactical Air Command titled Air Force Tactical Forces 1985 Study. Special Operations Mission Requirements.

This report was an attempt to put the reasons why the U.S. lost in Vietnam while looking into the future. This resulted in the entire conflict being labeled a

counterinsurgency. Using the best information available, the authors determined the classic missions flown by air forces would still be effective in a counterinsurgency role. No mention was made of Low Intensity Conflict, most likely because the war in Southeast Asia, (SEA) was anything but low intensity.

One statement from the report sums up the nature of the study.[1]

> In a counterinsurgency, interdiction is a specialized operation because of the lack of fixed battle lines and the overall nature of insurgent movements....Interdiction strikes against an insurgent yield numerous advantages: they reduce his level of stored supplies (if massed), delay the flow of replacement resources, and prevent him from sustaining an offensive.

The first problem with such statements is the reluctance to diverge from traditional missions and identify new areas where other missions may be required. Interdiction is a deep penetration into the enemy's rear to destroy fixed targets. By their own admission, counter insurgency has no fixed battle lines, and the "nature of insurgent movements" is to NOT mass their forces or their supplies, but to live off the land as much as possible, bringing their force together only when ready for a massive attack. By calling interdiction against such a force a "specialized operation", a level of understanding of the requirements is implied, but on further analysis has little substance.

The second problem is the statement "...reduce(s) his level of stored supplies (if massed)". This clearly admits current thought was inadequate because, much earlier than 1970, we knew how rarely the North Vietnamese massed supplies.[2] By trying to remain within the bounds of current tactical thought, no new intellectual ground was broken.

Although the USAF and Navy tried their best to slow the flow of supplies to the south along the Ho Chi Minh trail, the mission of interdiction against an insurgent had little utility. During the war in Vietnam, U.S. forces learned as long as the enemy remained dispersed, he does not allow our intelligence resources to locate him. The employment of massive air strikes against such a dispersed enemy is an inefficient use of resources to say the least.

The first use of tactical airpower in a raid, as we think of it today, was during the *Mayaquez* incident. Even though the concept of raids as a subset of LIC had not arrived on the scene, the lack of a definitional framework did not inhibit the national command authority from using airpower as required. In the final analysis, although the intent of tactical fighter attacks on Cambodian gunboats was only to keep the *Mayaquez* from entering the mainland port of Kompong Som, they may have succeeded in affecting the new Cambodian leadership. There is evidence to suggest the raids on the gunboats convinced the Khmers of the U.S. willingness to use deadly force to achieve political goals.[3]

After the Vietnam War was over, little thought went into the development of doctrine or tactics for LIC. In part, the nation seemed to want to put the loss of life for no defined objective and the embarrassment behind and move on. Also, the drawdown of forces and the tough economic times endured possibly made discussions of investment into LIC specific technologies something better delayed for better times. This author's experience in the late 1970's was that the war in SEA was treated with a surreal aura, as if it had never really happened but had been a bad dream we hoped never to repeat. As a result, no discussion of how to deal with insurgent conflict from the tactical airpower viewpoint, let alone tactics, doctrine or hardware, occurred.

PHASE TWO: RECONSIDERATION AND EMERGENCE OF LIC: 1979-1985.

As the number of small wars, insurgencies and conflicts increased in the late 1970's, many articles were written on the effect of these conflicts on U.S. policy and the U.S. ability, or inability to respond adequately.

In 1979, Professor Sarkesian hosted a workshop at Loyola University. After days of debate, the final working definition of LIC they settled on was "...the range of activities and operations on the lower end of the conflict spectrum involving the use of military or a variety of semi-military forces...to influence and compel the adversary to accept a political-military condition."[4]

This broad definition had the advantage and disadvantage of being arrived at by committee. By defining LIC as "range of activities on the lower end of the conflict spectrum", Sarkesian's committee avoided debate over the specific amount of force used which would define LIC. But this circular definition served the purpose of divesting LIC from what we now call Mid or High Intensity Conflict. The condition, either political or military, could be an isolated condition we wished the adversary to comply with instead of saying the conflict would "make the world safe for democracy" or halt the "domino effect" as communist influence spread throughout the world. However, it was so broad no service could filter out a mission, determine what hardware would be required or establish pre-eminence. The establishment of Readiness Command and the Delta Force (although the Delta Force was never acknowledged by the U.S.) were the services' response to President Carter's desire for a response force.

As the debate among the scholars continued, several smaller conflicts (as compared to the commitment the U.S. made in Vietnam) had occurred. The Israeli's innate ability to find new and innovative uses for our hardware in their particular situation, the British conflict in the Falkland Islands, the French muscle flexing in Morocco and the U.S. invasion of Grenada all re-established the realist theory that nations will act, ultimately, in their own interests.

In an attempt to classify these conflicts into separate definitions, scholars began a debate over what the conflicts actually were: LIC, Mid/High Intensity, Insurgency, Police Actions and Counterinsurgency were the most popular terms. The reason for the debate is still important. If we are to commit forces to combat, we want to know why and what they are expected to do.

In response to the debate, the acting Secretary of Defense, Caspar W. Weinberger listed six tests to determine the suitability of using U.S. combat forces in a speech to the National Press Club.[6] These criteria are important when understanding LIC and the potential for employing U.S. combat forces in the LIC environment.

First, the reason must be vital to our national interest or the national interest of our allies. Part of the debate over why the U.S. entered the Vietnam War centered around how a small nation half a world away could possibly influence our national interest. Mr. Weinberger established no new litmus test, but reaffirmed a basic one.

Second, the U.S. must be willing to make a wholehearted commitment (to the conflict) with the intention of winning. A piecemeal war serves no purpose but to drag out the fighting. In part, also, this criterion seeks to overcome the U.S. reluctance to be seen as the "ugly American", entering a weak nation and forcing our will on its people. As much as we would like to be able to quietly shape events to suit our view of the world, the use of

military force does not lend itself to quiet, discrete minimalization.

Weinberger's third criteria is the need for clearly defined political and military objectives. Moreover, the military must know how they are expected to achieve those objectives. In other words, what is the desired end state?

Fourth, the national command authority must continually assess the forces in place against the objectives they are trying to achieve. If we need more force, or less, adjustments must be made if we are to accomplish our objectives. Inadequate forces may be destroyed, a much less acceptable solution to the American people than appearing imperialistic.

The fifth criteria is a reasonable assurance the national will, public support, will be in favor of the undertaking.

Finally, Secretary Weinberger said the commitment of U.S. troops should only be made as a last resort. If diplomatic and economic measures have failed to achieve our goals, and the first five criteria are met, then the only suitable alternative remaining is the use of force.

Although LIC is never mentioned by Weinberger, his remarks establish a framework for the use of force. The LIC debate struggled in part from confusion with counter insurgency and in part from the hesitancy to commit to a specific set of circumstances under which force would be employed. Surely, Mr. Weinberger's remarks did as much to

placate the "doves" as it did to establish this framework; but, from his remarks came confidence that force, if used, would be used rationally.

In March 1985 the USAF Air University at Maxwell AFB, AL, hosted the Ninth Annual Air University Symposium titled "The Role of Airpower in Low Intensity Conflict." A wide cross section of experts attended the symposium. From Air Force Lieutenant Colonels to former Secretary of State George Schultz, experts and scholars debated the future of the Air Force in LIC. In studying the evolution of the terminology surrounding Low Intensity Conflict, it is clear no single event had such a marked effect on how LIC was viewed or defined before or since.

Professor Sarkesian's essay highlights a common problem: associating LIC to revolution and counter-revolution. He correctly points out the limitations of airpower in counter-revolution (counter insurgency). Both fast and slow moving aircraft have difficulty locating and identifying targets due to the ambiguity of the situation. "The revolutionaries are not likely to wear distinguishable uniforms, occupy clearly delineated areas or establish conventional administrative or logistical networks."[6] In other words, the pilot must be able to see the target AND identify it as friendly or enemy prior to releasing weapons, or run the risk of violating the current rules of engagement or worse, killing friendly troops. To carry Professor Sarkesian's logic to the next step, though, is to say LIC is

neither revolution nor necessarily counter-revolution. It was several years before the distinction between the two was finally made.

CONVENTIONAL WAR vs. LIC

Sarkesian's contrast of LIC to conventional warfare, however, is somewhat inaccurate regarding "clearly delineated areas" and "conventional administrative or logistical networks". As a former soldier, Sarkesian should have known that even in a conventional war, opposing forces do not occupy "clearly delineated areas". In fact, the army takes great pains to ensure any areas occupied are hidden as well as possible from air attack. Normally, conventional forces are trained specifically to hide. In addition, although conventional logistical networks consisting of miles of trucks are uncommon in many revolutions, opportunities for attack of supply depots may occur.

Sarkesian's answer to these problems is to separate forces and missions and align them into individual subsets, relating them to the phase of the conflict.[7] The resulting force structure would have SOF for situations below and through LIC, a separate force for mid-intensity conflict and our present force structure for high-intensity conflict. Dividing each phase of conflict into sub sets and building a force structure for each mission may be the perfect way to solve the problem.

Unfortunately, such a solution simply is not possible in today's resource constrained world. Hardware and personnel must be able to adapt to different circumstances, within limits, deriving increased utility from both.

Another important contribution to the evolution of LIC as it applied to airpower was made by Noel C. Koch, then the Deputy Assistant Secretary of Defense for International Security Affairs. Mr. Koch felt the symposium was mis-titled, instead preferring "Is there a role for Airpower in LIC?". His opening remarks leave some doubt. "...(T)he answer (cannot) be taken for granted if it has not been validated historically." Mr. Koch went on to say "If not, are there external reasons for this which can be corrected or if the reasons are intrinsic to air power and cannot be corrected?"[8] His challenge to the symposium, although somewhat hidden in his comments, is: can we find a place in our definition of LIC for airpower to be employed? If not, is the definition wrong or otherwise too limited, or is air power unable to perform the mission? This logical approach to the nature of the problem, finding a nitch for airpower in LIC, opened doors through which many proposals were analyzed, though not at this conference.

CONNECTING LIC AND COIN

An example of the limited thinking Mr. Koch referred to is the paper presented by Lt. Col. Deryck J. Eller to the symposium. Colonel Eller's viewpoint was that LIC and COIN are inseparable, and exclude other forms of warfare. He

fell into the trap Professor Sarkesian described of too closely associating LIC to counter insurgency. In Colonel Eller's words,

> Aesthetically pleasing, modern fighters, though essential in Mid and High Intensity war, are also virtually worthless in the LIC environment. Unfortunately, "hideously ugly" aircraft, such as the AC-130 or A-10 are eminently more suited for the surgical precision demanded of LIC strike craft. [9]

As Koch warned, limiting the definition may be the problem, not necessarily the limitations of the aircraft or air power in general.

A final twist on the definition of LIC assumes a strictly bipolar world, with the rivalry between the U.S. and USSR played out in the third world. Attempting to formulate a strategy for LIC, Colonel Thomas Cardwell told the symposium, "The aim (of LIC) is no longer to gain and hold territory, but to maintain political and economic access to the third world by pre-empting the Soviets from achieving their expansion aims." [10]

Even in a multipolar world, this definition of the goal of LIC is too broad. If, for example, the United States knew months in advance of Iraq's intent to invade Kuwait, and we can replace our old fear of the bellicose tendencies of the USSR with those of Iraq, would the U.S. have preempted the 2 August 1990 invasion? Most likely not, even under Colonel Cardwell's definition because it is so broad in scope. To say LIC will occur whenever we sense an attempt by a regional power to establish inroads to a

third world nation covers a great number of possible scenarios.

The final analysis of the symposium's impact on the definition of LIC, and the possible uses for U.S. forces is the definitions were unspecific and broad. Without precise definitions, the goals of the operation are difficult to determine. A major criticism of the U.S. Marine deployment to Lebanon in 1983 was the lack of clear goals and objectives.[11] In order to determine if a role for tactical airpower exists in LIC, the scholars had to move beyond their general concepts. As these definitions matured and became more precise, the possible roles for the military, and airpower, were more clear.

PHASE THREE: MATURING DEFINITIONS OF LIC 1986-1990

As is often the case, events began to outpace the experts ability define them. On the 10th of October, 1985 U.S. F-14s forced down an Egyptian airliner carrying the hijackers of the *Achille Lauro* cruise ship.[12] Although the action did not fall into the common definition for LIC, it was a use of force to achieve our aims. An analysis of this action by Professor William V. O'Brien called the action unique for three reasons. First, the action took place in a high technology environment where "...American assets are indisputably dominant." The use of F-14s as well as communication capabilities between the fighters, the naval force commander and the national command authority doubtless

set the stage for future operations. Secondly, Professor O'Brien says the operation was unique because the identity and "address" of the terrorists were known. In LIC, the exact location of the targets is a novelty to be sure. More importantly, Professor O'Brien points out the requirement for precise intelligence if the high technology we possess is going to be successful. Finally, the risk to innocent bystanders or "collateral damage" was small. Once again, a reaffirmation of the American distaste for injuring non-involved persons.

O'Brien's conclusion regarding the operation's uniqueness is:[13]

> If U.S. officials still require a kind of "smoking gun" evidence of complicity in international terrorism and a willingness on the part of identified terrorists to operate in isolation so that they may be attacked without danger to innocent people, it appears unlikely that a retaliation-in-force will ever be initiated again by the U.S. in the wake of a terrorist attack.

Although events in 1986 proved Professor O'Brien wrong about the likelihood of a retaliation-in-force, he was correct about the need for accurate intelligence and high technology employment in similar situations.

The single great airpower event of 1986 was the raid on Libya, named Operation El Dorado Canyon. How was tactical airpower used? If termed LIC, the definition would collapse of it's own weight because Libya had no insurgency, no government sponsored counter-revolution to fight. Obviously, tactical airpower had a role, but the definition of that role was lacking.

One attempt to put the role of airpower into perspective was The Air Force Role in LIC, by Lt. Col. David Dean. Lt. Col. Dean's analysis of several years of British and French uses of airpower over a 65 year period is unconstrained by the definitional debates of the early 1980's. Instead of trying to fit the use of airpower into preconceived notions, he simply tries to evaluate the common threads of success shared by decades of air power employment.

Some of the lessons Dean lists are still relevant. The first clear lesson is the requirement for air superiority. Airpower is very effective if able to take advantage of it's inherent speed and flexibility to mass forces at a specific place and time. Without control of the air, flexibility and mass are lost because resources are diverted to gaining control of the air. Although today, as Dean points out, air superiority is more difficult to maintain because "Technology and the arms bazaar can provide even the smallest insurgent group with sophisticated surface-to-air missiles and anti-aircraft artillery",[14] nonetheless, air superiority is important if air operations are to succeed.

Part of the debate surrounding LIC concerned the use of high technology, as General John R. Galvin pointed out in a 1986 lecture. The use of military force must "...avoid inadvertently furthering the insurgent's cause" by convincing non-aligned persons to join in the conflict

against the U.S. If the U.S. is seen as a bully, the use of high technology weapons can easily enhance that image. In other words, the size and composition of the force must be tailored not only to the mission, but to the possible effects using high technology forces might have on the population. Although hardly a restriction on the employment of force, General Galvin's comments emphasize consideration of the after effects if high technology is used inappropriately. Here again, the use of types of force is not tied to the type of conflict.

Low Intensity Conflict was divided into separate missions with individual definitions in 1987. After he retired, General Paul F. Gorman testified for the Senate Armed Services Committee on the usefulness of Special Operations Forces (SOF) in Low Intensity Conflict. His comments are still valid today.

> ...Special operations are a unique set of soldiers, sailors, airmen and marines with specialized training and equipment. LIC is a form of warfare in which the U.S. deliberately accepts limits on the kind and amount of force it brings to bear....(SOF) are not synonymous with low intensity conflict. [15]

The division of missions which had previously been lumped into the LIC basket allows more specific taskings to be levied on the military as well as allowing the military to accomplish it's assigned missions better.

In September of 1987, the recently formed Army-Air Force Center for LIC published an article titled Operational Art in Low Intensity Conflict. This article most accurately

outlines the role for tactical airpower in LIC. The use of conventional airpower in LIC generally falls under the heading of Peacetime Contingency Operations, according to the authors. The most likely scenarios listed are:

-Show of Force/Demonstrations

-Raids and Attacks

-Rescue and Recovery Operations

-Support to U.S. Civil Authorities

Interestingly, later in the article, the authors note that success in these forms of conflict carries with it a certain standard.[16]

> The traditional U.S. view of success, however, requires tactical forces be successful for operational forces supporting strategic goals to be successful. Without a clearly developed campaign plan or major operations plan (with finite goals and objectives), a combatant could win a series of battles and engagements that would have no decisive effect on the final outcome of the conflict.

Peacetime Contingency Operations, thus defined, became a separate part of the LIC equation. By slicing off the missions under PCO, the services were not merely looking for new roles and missions, but trying to fit their missions into clearly definable boundaries. The raid on Libya, the attack on the surface-to-air missile sites in Lebanon, Operation Urgent Fury and other conflicts had occurred without the benefit of clearly stated definitions of LIC and PCO. Arguably, the need for such precision may not be acute. The missions took place, albeit with mixed success, and in general the objectives assigned were achieved. But

with precision comes the ability to focus forces and training doctrine in specific areas.

One of the best writings on the part played by Peacetime Contingency Operations is Planning Considerations for the Combat Employment of Air Power in Peacetime Contingency Operations by Major Bradley Butler.[17]

> Peacetime Contingency Operations. These operations use carefully tailored forces to complete a specific, clearly defined mission. Such operations can range from small to massive employment of military forces. They range from short duration events planned in secrecy and boldly executed, sometimes on short notice, to large, highly visible commitments of U.S. military power over extended periods of time.

Major Butler's monograph points out planning considerations for PCO, but in doing so misses an important step. His and other articles over the previous 18 years are dedicated to defining the limits of LIC, finding the correct missions and roles for various forces and establishing a common ground for discussion. However, none of these writings established an optimum scenario or if optimum conditions exist for the employment of a given force in LIC or one of the sub- sets of LIC. Nor did Butler's planning considerations take into account the possibility that some situations may not be favorable for airpower, or tactical airpower may not be the right answer for a given set of conditions.

The most recent joint publications change the term Peacetime Contingency Operations to simply Contingency Operations (CO). The best definition of what CO may entail

for tactical aviation is contained in Joint Test Publication 3-07,[18] in the discussion of Attacks and Raids.

> The United States executes attacks and raids to achieve specific objectives other than gaining or holding terrain. Attacks by conventional...forces... are used to damage or destroy high-value targets or to demonstrate US capability and resolve to achieve a favorable result. Raids are usually small scale operations involving swift penetration of hostile territory to secure information, temporarily seize an objective, or destroy a target(s), followed by a rapid, preplanned withdrawal.

The rapid penetration, attack and withdrawal described is accomplished with either SOF or tactical airpower.

For twenty years, experts, activists, scholars, advocates and critics have debated the role of various forces in LIC. By dividing LIC into major parts, a clear definition of roles emerges. Contingency Operations are only a part of LIC, and tactical aviation is one tool the NCA may employ to achieve our national objectives. The question still remains: Is there an optimum role for tactical aviation in CO?

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CHAPTER THREE

FACTORS COMPRISING THE OPTIMUM SCENARIO

Because of its independence of surface limitations and its superior speed the airplane is the offensive weapon par excellence.

-Giulio Douhet

The evolution of Low Intensity Conflict is due in part to operations conducted by the U.S. and other nations. These operations in some cases were ahead of the definitions of roles and in other cases not. Several case studies, mentioned in chapter 1, and the definitional debate over Low Intensity Conflict (LIC) and Contingency Operations (CO) include many similar aspects.

The methodology used to determine if an optimum role for tactical airpower exists is comparison of four case studies. Viewed in light of the historical debate over the definition of LIC, these case studies yield factors the successful and unsuccessful operations had in common.

In fact, nine criteria impacting on the use of tactical airpower in PCO are evident. They are: Intelligence, Availability of Forces, Threat, Collateral

Damage, Clear Objective or Criteria for Success, Time, Air Superiority, Potential for Surprise and Overall Risk.

This chapter discusses each factor in detail. By examining each factor in light of its contribution to the successful completion of the mission, a rating of acceptability for each factor results. The rating system used for these factors is from one to ten. If the rating is eight or above, the factor, such as intelligence, is optimal for use of tactical fighters in the operation. A rating of from 4 to 7 indicates an acceptable input, but indicates risk either for mission accomplishment, aircrew survival or collateral damage. Any rating below 4 indicates an unacceptable condition, possibly precluding mission accomplishment and certainly involving significant risk. Each area is examined separately, although the interaction between areas is often clear. No attempt is made to separate the lack of intelligence on an adversary rating from the level of threat rating, for instance. Each area is described and rated separately, as much as possible, through the eyes of the decision maker at the time.

Chapter four analyzes the case studies in light of the new matrix, to determine which conditions in each area combine to form an optimum scenario.

INTELLIGENCE

Accurate intelligence is the single most important element for a successful operation. With solid intelligence

on enemy disposition, accurate planning for the primary operation as well as possible contingencies is considerably easier. The employment of modern fighter aircraft demands intelligence on the location of the target, possible threat types and locations, threat objectives, navigation update points and the general population's potential reaction to an airstrike.

The location of the target is obviously important. Without accurate data from either photographic intelligence or very accurate maps of the target, successful execution is doubtful. The photographic intelligence must be in a usable format as well. Each photo needs to show not only the specific target in enough detail for it to be distinguished from it's surroundings, but a wide enough view for other landmarks to be visible in relation to the target. Photos taken late in the afternoon or early in the morning are less useful because of the shadows and low amounts of contrast available.

Threat information in terms of the types of threats expected and their locations is also critical. The types of threats expected (as well as several other factors, such as the weather) require specific tactics to defeat or neutralize. If the threat is only from small arms or light anti-aircraft artillery (AAA), the choice of tactics becomes more liberal. When surface-to-air missiles are introduced, the range of options begins to decrease.

For example, a monograph by Major Gary J. Tocchet points out the effect AAA had on the Soviets in Afghanistan.[1]

> Air defense artillery had a significant impact on Soviet operations in Afghanistan. Between the SA-7 (a surface-to-air missile), 12.7 and 14.5mm AAA, the Soviets lost 0.8 aircraft per day by conservative estimates. With the US Stinger (surface-to-air missile), 390 to 510 per year were lost by the Soviets.

Obviously, the threat level will directly affect the risk of the overall operation, as well as limit the possible tactical options. Potential air-to-air threats are also important. Numbers and types of aircraft as well as who the pilots are and how much and what types of training they have is important. For example, if the enemy can launch enough MiG-21s to achieve a 4:1 ratio in their favor, our ability to achieve air superiority is in doubt. If they have more modern fighters, but very few are in service or are flown by inexperienced pilots, the threat will be less. The amount of decrease for similar threat capabilities is purely a subjective judgment by this author. In a planning scenario, the opinions of several experienced planners is critical in accurately determining the actual threat faced by the aircrews. Subjectivity in this case cannot be avoided.

The objectives of the threat tell the planners and the decision maker as much as the location. For example, in the Israeli raid on Tunisia, the mission of any AAA sites may have been to protect the King's palace. They would have oriented their fires toward the approaches to the palace and focus their attention there, possibly excluding other areas.

Even if the King's palace had been located near the actual target, it's priority may have precluded defense of the PLO headquarters.

Possible reactions of the local people is the final area in which intelligence should focus. If the leader of the target nation is openly hostile to the U.S. and receives popular support, we can expect little assistance from the people if one of our aircraft is shot down. On the other hand, if a certain area of the country is pro-U.S., the ingress and egress routes can be flown over or near those areas to enhance the chances for recovering downed aircrews.

Accurate intelligence leads to target destruction and survival of the pilots executing the mission. The speeds flown on ingress to the target exceed 850 feet per second. At these speeds, pilots must be able to recognize various terrain or man-made structures in a definite pattern. This pattern is intensely studied prior to mission execution. By memorizing the target location in terms of its specific relationship to these large features, the pilot can methodically track his eyes to the target. Clearly, this requires accurate target location prior to launch. Tactical airpower does not lend itself to probes of the target area for target location unless complete air superiority can be maintained for a significant period of time. The target must be hit on the first pass, accurately.

The longer the pilots stay in the target area, the higher the chances they will become targets for AAA or surface-to-air missiles.

Intelligence is rated by assigning a value of one through ten to the intelligence available for the mission. Accurate, confirmed strategic and tactical intelligence, as well as usable intelligence products for the mission rate up to a score of ten. If the intelligence is ambiguous, unconfirmed or of suspected reliability, a lower score is appropriate. Often the problem is not judging intelligence beforehand. The aftermath of missions like the raid on the Son Tay prison camp show the limits of intelligence, but realizing those limits prior to the mission is difficult.

TIME

Adequate time to plan the mission is essential. Given the access to intelligence, the aircrews actually flying the mission should be involved with the mission planning. Although this is not always the case, adequate time allows the crews to suggest modifications based on their recent training and experiences in the aircraft higher headquarters simply does not have. The aftermath of a raid on a belligerent will be very media-intensive. Errors in planning due from a lack of adequate time may result in national embarrassment, or death of the pilots. Normally, a squadron can plan and execute a mission in 24 hours, given

the fact the unit is positioned adequately or has deployed to a staging base.

If the target is not within striking distance from current installations, time for the aircraft to deploy and preposition must be allocated. Figure 1 is a map of the world showing current U.S. air bases. From any of these bases, targets may be reached in many areas of the world. The author's discussions with a number of pilots trained in many different aircraft led to the conclusion that a flight time of 8 hours to reach a target is achievable. After 8 hours of flying in a fighter, fatigue begins to set in. The pilot's ability to rapidly accomplish several tasks in seconds (remember, he is flying at over 850 feet per second), diminishes as fatigue increases. Pilots may use "GO" pills, prescribed by flight surgeons to pilots conducting long flights. These pills are effective on most pilots, but leave the individual more fatigued when the effects wear off. Remember also, the 8 hour point is only to the target. Landing at the point of departure occurs at the 16 hour point. A loss in the landing phase is no more acceptable than a loss in the target area, although mission accomplishment considerations will often override considerations for potential losses after the target is attacked. Time to rehearse the mission is highly desirable. Especially in scenarios covering long distances, errors in planning are easily identified and corrected prior to mission execution. Rehearsals also allow validation of the

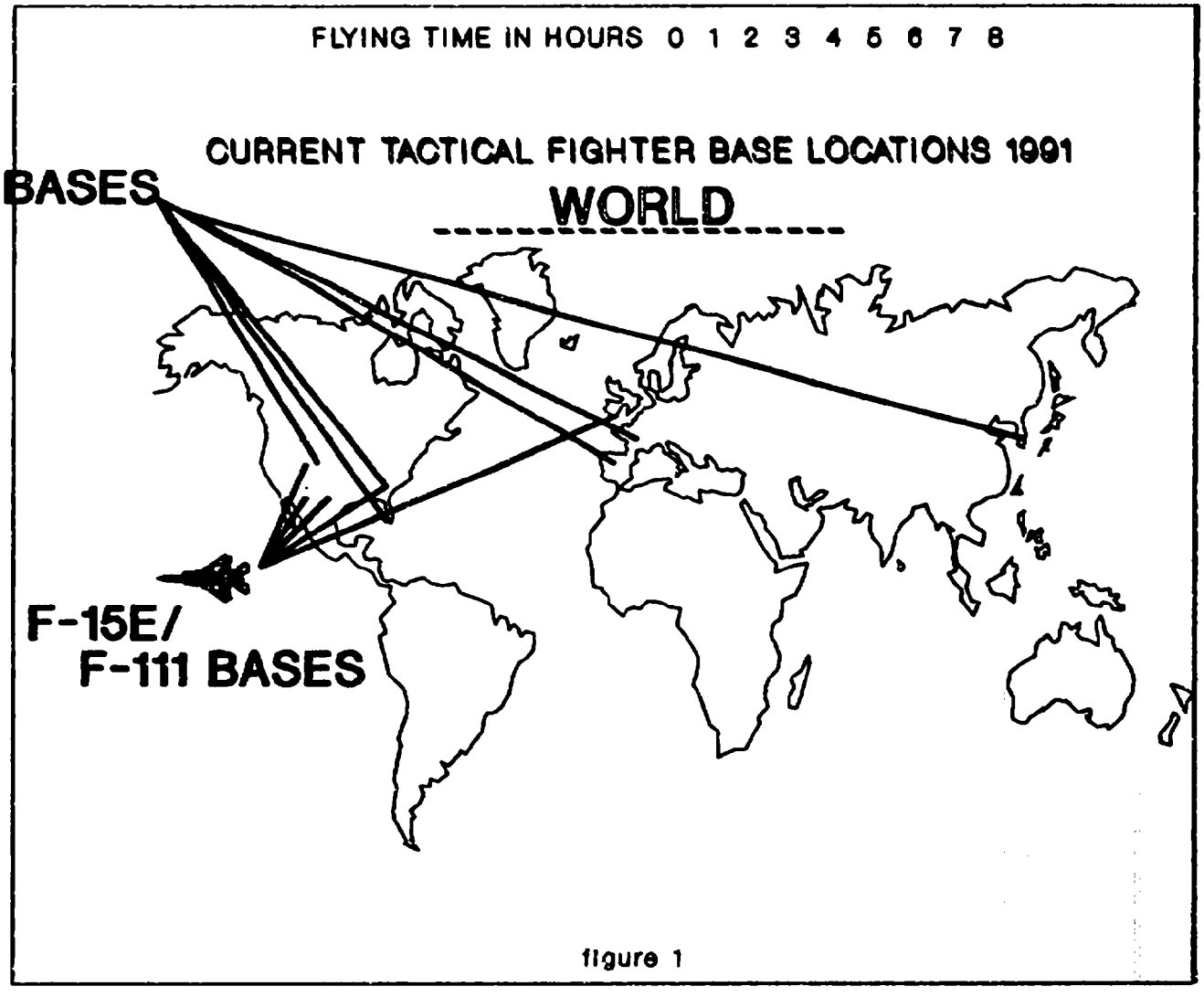
FLYING TIME IN HOURS 0 1 2 3 4 5 6 7 8
CURRENT TACTICAL FIGHTER BASE LOCATIONS 1991
WORLD
F-16 BASES
F-15E/
F-111 BASES

figure 1

planned tactics, as much as possible, given the restrictions inherent in finding a suitable substitute target.

A final criteria for judging time is the time of day for the attack. The time of day can significantly add to the overall tactical advantage sought by the aircrews. Attacking out of the sun has been a tactical maxim for fighter pilots since WW I. With the sun at your back, you cannot be seen by the object of the attack. Conversely, attacking into the sun blinds the pilot to whatever lies in front of him and can be a great disadvantage. In addition, attacks at night may hold some advantage, depending on the threats night capabilities and the potential for surprise.

Time is rated high when adequate time exists for the pilots flying the mission to plan and rehearse the scenario. This time includes any required time to deploy to a staging base. In addition, the timing of the attack may result in a high rating is it contributes to decreasing the overall risk or increasing the tactical advantage enjoyed by the aircrews.

FORCE AVAILABILITY

Once the threat and target are known, are adequate forces available for the mission? In El Dorado Canyon, the threat and optimum attack scenario dictated use of night attack aircraft. There was some speculation the F-111's from Great Britain were included so as to give the U.S. Air Force a part of the mission. In his testimony to Congress shortly after the raid, Chairman of the Joint Chiefs of

Staff, Admiral Crowe, put such speculation to rest when he emphasized how the required force structure was arrived at.[2]

> The carriers could have taken out those five targets, but not in one raid, so tactical surprise would have been lost. Secondly, the F-111's were ideally suited for such a mission. They train over land at night all the time. The carrier training is diffuse because they do a number of things: attack ships, submarines and land targets, etc. Finally, we all agreed it was very important to present the Libyans with a new axis of attack they didn't necessarily suspect. While they were concentrating on the carriers, we wanted to throw an element we didn't believe they were ready for or anticipated.

Admiral Crowe's comments bring up another important aspect: the forces must be appropriate for the task at hand. A "force" implies a combination of people with the hardware. Just because the airplane is capable of performing a certain mission does not mean that each pilot in a unit can fly the aircraft to achieve that level of advertised performance. The F-16 is a good example. The F-16 is capable of performing every tactical aviation role: Air Superiority, Offensive Counter Air, Defensive Counter Air, Battlefield Air Interdiction, Close Air Support, Night Attack and several variations of these. However, not every unit trains to combat proficiency in all missions. If a unit is equipped and trained for Offensive Counter Air, merely supplying it with advanced air-to-air missiles such as the new AIM-120 Advanced Medium Range Air-to-Air Missile does not make the unit capable of performing the Air Superiority mission. Combat capability therefore encompasses several factors.

Force availability is rated high when the mission fits specifically into a capability of the unit tasked. An F-111 unit, for example, has no integral self-defense capability. Giving this unit a mission where the chance for interception by enemy air forces is high would result in a low score in force availability. However, an F-16 or F-15E unit in the same situation would score higher than an F-111. If the force availability score and overall score are unacceptably low, other forces may be more appropriate, i.e., SOF or Army Rangers.

LEVEL OF THREAT

Defining the level of threat to the aircraft in a potential operation must take into account the intelligence on the threat as well as the unit considered for the mission. Intelligence on the threat capabilities is rated according to their ability to detect and counter an attack effectively. The unit considered for the mission may be extremely well trained in the type operation considered, which lowers the relative risk, or attempting a new mission or different aspect of a familiar mission. Clearly there is significant interplay between the level of threat and the available force for the mission. The threat may preclude employment of ground troops, but naval gunfire may accomplish the mission adequately. These factors must be weighed relatively, not in a vacuum.

Intelligence on the threat includes their hardware as well as their level of training. If there is no threat, either from small arms, surface-to-air missiles or aircraft, then a 9 or 10 rating is appropriate. As the level of threat increases, the rating correspondingly decreases. The amount of hardware also includes ground based radar and its ability to detect the approach of the attack, as well as when the attack might first be discovered. For example, if a target area is covered by radars capable of detecting ingressing fighters at 50 miles, that gives the air defense system approximately 8 minutes to react and prepare to defend their territory. The more time the threat systems have to react, the higher the threat to the friendly attack force. Once the fighters are detected, the type of defending force may increase or decrease the level of threat. If the only defense is a squadron of MiG-19 (Korean War vintage fighters), the level of threat would be less than an integrated air defense network consisting of SA-8 surface-to-air missiles and late model fighters controlled by a modern radar site. This intelligence is vital. Assuming a third world nation does not have the technology to threaten substantially our forces is a miscalculation. In a report for the chairman of the House Committee on Government Operations, the General Accounting Office said,[3]

> ...the official documents we reviewed stated that advanced military technology has been distributed throughout the Third World and is easy to acquire. According to these sources, the military-technology gap between the major powers and the Third World is rapidly narrowing.

Once the level of threat regarding hardware is known, their level of recent training and overall experience may lessen or increase the weight assigned to the matrix. The level of recent training is important because readiness is a direct result of recency and intensity of training. The most modern equipment in the hands of untrained personnel has no capability. As the complexity of the equipment increases, so too must the intensity of training to ensure individual proficiency.

For example, in the U.S. Air Force, many years are required before a pilot is fully combat ready. Basic flying training requires 50 weeks of training. To become minimally combat capable, a pilot must spend another full year in intensive training. At this point the new pilot is considered inexperienced, and remains so until approximately 18 months to two more years of intense training have passed. Once experienced, a pilot can experience lulls in training intensity and regain proficiency much quicker than a new pilot can build experience. It is the combination of experience and recent training in any weapons system that determines the capabilities of the operator.

COLLATERAL DAMAGE

The probability of collateral damage is one of the sticking points U.S. society, and leadership faces when deciding to conduct contingency operations. The more isolated the target, the "cleaner" the attack can be in terms of the damage to surrounding facilities and the

potential threat to innocent bystanders. Our national will is strong when we can isolate the "bad guys" and attack them, but seems to erode quickly in the face of collateral damage. The outpouring of support for Colonel Qaddafi following the death of his adopted daughter partially clouded the fact Qaddafi was directly responsible for the deaths of scores of people from the 1972 Olympic Games massacre to the attack on the La Belle discotheque on 5 April 1986 which precipitated the El Dorado Canyon mission.[4]

The argument for precision guided munitions and so-called "surgical strikes" maintains damage to nearby facilities can be minimized, making the risk of such damage low. This author's experience testing and live firing precision guided munitions, from laser guided weapons to TV. and infra-red guided missiles, is that precision guided weapons offer only a partial answer. These complex systems require a high degree of training as well as cooperative weather for employment. In addition, not all targets are appropriate for standoff, precision guided weapons. Often, to hit a precise aimpoint, the aircraft must fly to close range for the pilot to ensure he has the correct target prior to weapon release. This maneuver greatly increases the threat to the aircraft. The GAO study referenced above supports this view.[5]

> The Low Intensity Warfare events (we studied) demonstrated a variety of limitations to the effectiveness of certain precision-guided munitions... However, these limitations are not always factored into the analysis of specific engagements.

In the final analysis, acceptable collateral damage is a decision the President must make. The risks to civilian personnel and facilities can be minimized, but not eliminated, by using precision guided weapons and attacking during non-working hours. However, a change in wind direction and speed, a fuze failure to function or a basic human error may cause inadvertent loss of life no matter how carefully planned and rehearsed the operation is.

CRITERIA FOR SUCCESS

After intelligence, knowing the criteria for success or the desired end state is the most important factor. From the desired end state, military planners deduce the level of damage required. Tactical fighter operations are limited to shows of force, destruction of targets and diversion of other aircraft. A fighter force cannot rescue hostages, seize and hold terrain or maintain "presence" unless invited to an airfield by the host government. This knowledge combined with the known threat scenario results in the desired force structure for the mission. The end state is the political objective desired. There must be a direct link between the end state and the political outcome desired. During the Cuban Missile Crisis, President Kennedy wanted the Soviets to remove their missiles and return to the status quo peacefully. Bombing the missile sites may have destroyed a large percentage of the missiles, but not all and not peacefully. The naval blockade imposed by the

President demonstrated his resolve without attacking the missile sites and resulted in their removal. An air strike would not have achieved the same end state.

FM 100-5 discusses objectives as one of the nine principles of war. "Strategic, operational and tactical objectives cannot be clearly identified and developed, however, until the political purpose has been determined and defined by the President and Congress."[6] If unknown, the criteria for success must be determined prior to mission planning. Otherwise critical time may be wasted in unnecessary research.

A related question to the desired end state is: Will the political objective be achieved by the action? This determination requires accurate intelligence as well as target analysis. If the political objective is to prevent nation X from obtaining an offensive submarine attack capability, the mission objective(s) must support that end state. Destroying the harbor may destroy the docks where the submarines will be located, but also may destroy the commercial shipping industry. If the factory where the submarine engines are built can be destroyed, the political objective is achieved. If, on the other hand, destroying the harbor only forces the nation to be build at another harbor, then it's destruction does not achieve the political objective.

The more clearly defined the political objective, the easier it is to determine if the action achieves it.

AIR SUPERIORITY

Air superiority is essential for successful air operations. Air Force Doctrine and historical analysis of conflicts from the inception of the airplane validate the need for air superiority.

Air Force Manual 1-1 lists air superiority as the first requirement for effective air operations.[7] Control of the air gives air forces the freedom of action required to locate and attack targets. Obtaining air superiority means not only the ability to prohibit enemy fighters from interfering with air operations, but also suppression of enemy air defenses so the attack aircraft can deliver their weapons without being engaged from the ground. If air superiority is not achieved, a significant percentage of the pilot's attention is focused on locating potential threats, as well as maneuvering to defeat the threat once found. The result is less attention directed toward finding and destroying the target. The possibility of either missing the target or forcing the aircraft to loiter in the target area in order to find the target increases without air superiority. The most famous example of the importance played by air superiority is the Battle of Britain. Germany's failure to control the British skies kept Hitler from attempting an invasion.

Judging our ability to achieve air superiority is similar to the process of evaluating Forces Available vs the Level of Threat. The first criteria is knowledge of threat

capabilities. Once threat capabilities are known, a force package designed to achieve air superiority can be designed. If the threat is small arms and surface-to-air missiles, F-15 air-to-air fighters are not required. On the other hand, a minimal air-to-air defense capability of the enemy may be dealt with by F-16's or F-15E's, using their inherent self-defense capability. The tradeoff, discussed in the following section, is the logistical and electronic signature larger and larger packages emit, limiting the potential for surprise.

With any air threat, though, air superiority is a requirement. The unknowns of achieving air superiority may never be answered, and the rating of Air Superiority in the matrix should reflect those unknowns. Therefore, Air Superiority might never be rated as 10, to account for unknowns in air combat.

Determining required forces for superiority of the air, like the requirement for the force required to attack the target(s), must be made by an airpower expert. The tradeoffs between introducing a massive force of high technology fighters into a scenario and limiting the force to the amount required to do the job must be discussed with the decision maker(s). To paraphrase General Galvin, the introduction of our technological might into a small nation may enhance the perception of the U.S. as a imperialist bully, forcing it's will on the people of a sovereign

nation. In the long run, this may be counterproductive to our objectives, unifying the nation in question against us.[8]

SURPRISE

Surprise is tactical advantage. The ability to enter a conflict area, attack a series of targets and egress before the enemy is aware of your presence is the epitome of a surprise attack. The defenses of the enemy have no time to react, no time to prepare for the attack. Our ability to achieve surprise in many ways enhances our ability to attack targets with minimal force, achieve air superiority and in the end, ensure success.

Achieving surprise in our open society may prove difficult. The El Dorado Canyon mission did achieve a significant amount of surprise. Even though the Libyans knew of the presence of the U.S. carriers, they did not know the exact timing of the mission, or if a mission would really be launched. However, an American news correspondent in Tripoli did try to notify officials about the raid. After the attack, she wrote:[9]

> I phoned ABC News in New York and was told that U.S. Government sources predicted Reagan would attack Libya sometime in the next 48 hours. Then I heard from another Washington source that a U.S. military operation against Libya might be in process <u>now</u>...My gut instinct was that there was something to the tip... I again contacted ABC in New York to pass the latest bit of information... *I then tried reaching some high-level Libyans to get some reaction, but the telephones rang unanswered in several offices and houses.* (My emphasis)

Clearly, the ability to achieve surprise and minimize casualties on our side takes a back seat to some persons desire to either be seen as a friend of the press, or "get the story."

More importantly, planners must consider if surprise can be achieved in a period of heightened tensions. President Reagan had branded Libya and four other nations of being members of a "...confederation of terrorists states", who were carrying out acts of war against the United States. This statement was made on 8 July 1985, nine months prior to the operation.[10] The presence of the U.S. Navy off the northern coast of Libya could not have reassured Colonel Qadhafi our intentions were peaceful. Therefore, although surprise is always desired, the entire operation should not be based on the success of the deception plan upon which the surprise is based.

RISK

The final criteria for determining an optimum scenario for using tactical airpower in contingency operations is the level of risk. Risk may be considered in terms of the risk to U.S. personnel, the risk to innocent persons (if such exist) or the risk of failure and embarrassment. The risk of an operation must be considered in terms of the possible gains as compared to the possible losses if the operation fails. This risk vs benefit analysis is common to decision makers.

The risk to U.S. personnel must be considered in light of the chances lives will be lost. U.S. armed forces are paid to take risks in defense of the nation. However, sending a force into a threat area ill-prepared for combat is unacceptable. Often, the risk can be minimized by using effective tactics and adequate force structure. However, there is no solution for determining the potential risk to life in combat. Beyond the knowledge of threat capabilities discussed above and the force structure necessary to deal with the threat, an assessment of risk is more of a "gut feeling" by the planners than a quantifiable number. Planners must therefore communicate their assessment to the decision maker in terms of risk to friendly forces.

The risk to innocent personnel is somewhat easier to establish, although precision is elusive. Knowing what the surrounding area contains in the way of dwellings, storage facilities and access roads aids in risk assessment. The Israeli attack on the PLO headquarters in Tunisia had slight risk to innocent bystanders. From the description of the target area by Jonathan Randal of the Washington Post, the target was relatively isolated.[11] Located in a large, open area, the target seemed more like a resort than a headquarters. The grounds spread over several hundred yards, isolated from other homes. Knowledge of the target's daily routine might give the planners an idea of what time of day is best for attack based on the absence of innocent workers or other persons in the area.

The risk of failure includes all the unknowns mentioned above. Nominally, if all the intelligence data is correct and the mission is executed according to plan, the risk of failure is small. The more questions a planner has about the mission in terms of enemy capabilities, the less sure the intelligence experts are on specifics regarding the target or threat reactions, the less clear the end state or objectives desired, the more we gravitate toward minimum force instead of economy of force; the more we risk mission failure.

The result of the Desert One mission to rescue hostages held in the U.S. embassy in Tehran was complete embarrassment for the government and the military. Not only were the lives of the hostages at greater risk, but the world view of America was of a world power without the means to exert its will.[12] Although the risk to U.S. servicemen in such an operation is small, the loss of national prestige is great and takes time, and successful actions before it is overcome.

In rating risk, as the risk for an operation decreases, the rating increases. This method of rating relative risk results in the final rating for the scenario being consistent. High numbers indicate favorable conditions (low risk) and low numbers reflect high risk.

CONCLUSION

The factors in the matrix below are the individual areas which answer the question: Is there an optimum scenario for tactical airpower in contingency operations? Clearly, there are uses for tactical airpower; operation El Dorado Canyon proved an operation can occur even in the absence of clear definitions of the precise actions taken. Comparing the matrix criteria to several case studies will answer the question and possibly result in a standard against which all uses of airpower may be considered.

OPTIMUM CONDITIONS FOR SUCCESS MATRIX

Intelligence	
Force Availability	
Threat	
Collateral Damage	
Objective	
Time	
Air Superiority	
Surprise	
Risk	

Table 1

ENDNOTES

1 Major Gary J. Tocchet, "Air Defense in the "Lower" End of the Conflict Spectrum", (Monograph, School of Advanced Military Studies, US Army Command and General Staff College, Combined Arms Reference Library, Fort Leavenworth, KS, 1989), 21.

2 "Weinberger, Crowe Provid Additional Details on Libya Raid", Aerospace Daily, 2' June, 1986, 495-496.

3 General Accounting Office, Report to the Chairman, Committee on Government Operations, House of Representatives: U.S. Weapons. The Low Intensity Threat is not Necessarily a Low Technology Threat. (Washington: General Accounting Office, March 1990), 3.

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5 GAO Report: Low Intensity Threat, 7.

6 U.S. Army, FM 100-5 Operations, (Washington: Department of the Army, 1986), 173.

7 U.S. Air Force, Air Force Manual 1-1: Basic Aerospace Doctrine of the United States Air Force, (Washington: Department of the Air Force, March 1984), 2-11 to 2-13.

8 General John R. Galvin, "Uncomfortable Wars: Toward a New Paradigm," Lecture delivered to the Kermit Roosevelt Lecture Series, 1986, Combined Arms Reference Library, Fort Leavenworth, KS, 1986, 32.

9 Elizabeth O. Colton, "To the Shores of Tripoli", Soldier of Fortune, (August, 1986), 102-107.

10 Clifton Daniel, Chronicle of the 20th Century, (Mount Kisco, NY: Chronicle Publications, Inc., 1987), 1262.

[11] "Israeli Air Raid Destroys Arafat's Base in Tunisia", Washington Post, 2 October, 1985.

[12] Clifton Daniel, Chronicle, 1172.

CHAPTER FOUR

CASE STUDIES IN CONTINGENCY OPERATIONS

> War is a matter of vital importance to the State, the Province of life or death, the road to survival or ruin. It is therefore mandatory that it be thoroughly studied.
>
> -Sun Tzu

The nine criteria in chapter three are derived from studying several examples of tactical airpower employment in contingency operations. Not all case studies have all nine attributes in equal amounts. Reviewing each case study in light of the matrix criteria and scoring each scenario accordingly will answer the question of whether an optimum scenario exists for the use of tactical fighters in CO.

THE MAYAQUEZ INCIDENT

In April of 1975, the Khmer Rouge, a Communist led group of insurgents, captured the capital of Cambodia and set up a government. One of the early proclamations from the Khmer government was a 90 mile economic zone off their coast. Despite the internationally accepted 3 mile territorial limit, the Khmer government patrolled out to the 90 mile mark and into a well traveled sea route between Thailand and Vietnam.

The SS *Mayaquez*, a WW II vintage container ship owned by the Sea-Land Corporation, was skirting the economic zone on 12 May 1975 when it was intercepted by a Cambodian gunship. The Cambodian fired a shot across the bow of the *Mayaquez*, forcing the captain to halt. As the *Mayaquez* slowed, and until boarded, the ship's radio operator sent out an SOS. The emergency signal was picked up and relayed, with some delay, to the National Military Command Center. President Ford was informed of the situation during his Monday morning intelligence briefing. Washington's objectives were to secure the release of the crew, return of the ship and secondarily to impress the rest of the world with U.S. capability and political will to act in defense of American interests.[1]

The initial objective, however, was to keep the *Mayaquez* from being steamed into the mainland port of Kompong Som. After the location of the ship was confirmed by Navy P-3C's, the U.S. Air Force was tasked to assist in keeping the ship from being taken into Kompong Som. Although the Navy P-3's could monitor the situation, they could not provide any deterrent firepower to discourage the Cambodians from taking the *Mayaquez* to Kompong Som. The first orders to the Air Force were to fire in the vicinity of the boats in the area, but not directly at them. Later in the day, pilots were given permission to disable the ship with fire, but not to sink it, and all actions were to be taken with a minimum risk to life.[2]

On Wednesday, approximately 48 hours into the incident, the President issued orders authorizing U.S. forces to shoot at gunboats trying to leave Koh Tang Island for the mainland. During the rest of the day, several gunboats were sunk or disabled by Air force F-4s and A-7s. In his study Land Based Air Power in Third World Crises, Dr. David Mets notes that these actions were not designed to cause a behavior change in the decision makers in the new Cambodian government. The primary goal of the military action was to stabilize the situation while gathering information from which to derive a behavior changing strategy.[3] Comparing the situation against the matrix yields several insights to the use of tactical airpower in contingency operations.

INTELLIGENCE

The first step taken by the administration was to confirm the facts and gather more data on the specifics. The time difference between the *Mayaquez* and Washington was 11 hours. What occurred at 6:00 PM in Cambodia was 7:00 AM in Washington. Therefore, when the JCS warning order went out to confirm the location of the ship, there was only an hour or so of daylight left in Cambodia. A Navy P-3C Orion was sent to the scene and found a ship, but it was too dark to confirm the ship as the *Mayaquez*. The next morning, a P-3 made a low pass along side the ship and confirmed it was *Mayaquez*.[4]

Clearly, locating the target was paramount. Without knowledge of the ships location, the rest of the plan could not be formulated. In this particular case, photographic intelligence was probably unnecessary. A large container ship anchored off a small island, surrounded by gunboats, would not be especially difficult to find.

If tactical intelligence on the target was easy to acquire, strategic intelligence on the Cambodian objectives and dialogue with them to resolve the crisis was absent. The new government had no relations with the U.S., and although suspected of being friendly with mainland China, no real communication with the Khmer Rouge occurred through that channel either. Without strategic intelligence on the objectives of the decision makers, formulating a plan to convince them to alter their behavior was difficult at best.

Intelligence on the threat to U.S. air power was fairly good. The winding down of the Vietnam War had recently completed, with the fall of Saigon, and much was known in the way of intelligence on the North Vietnamese. As Dr. Metz points out, relations between the Communist Khmers and the North Vietnamese were far from cordial, making the likelihood of intervention by the Vietnamese low. The Cambodian "Air Force" T-28s were the only aircraft with the range to reach the area, but were not fast enough to keep up with the Navy P-3s, let alone stand up to an F-4.[5]

One piece of missing intelligence was the location and condition of the crew. The Navy P-3 could not locate

the crew on the *Mayaquez*, and was uncertain if they had been moved under the cover of darkness. Dr. Mets reports the crew was being moved toward the mainland on Wednesday when the gunboat they were on came under attack by an Air Force fighter. "...a US Air Force fighter pilot making a firing pass on the boat recognized Caucasian faces just in the nick of time, and withheld his fire."[6] This scenario is highly unlikely. At normal firing ranges for the standard 20mm cannon (2500 feet), a six foot tall person is about 0.25 inches tall, from the pilot's point of view. Distinguishing between caucasian and asian face color at those ranges is highly doubtful. However, for whatever reason the pilot withheld fire, he did manage to locate and identify the crew of the ship. The President then ordered the boat to be turned around by firing in the water near the gunboat and using riot control agents, which became necessary.[7]

Rating intelligence in this operation must account for the lack of strategic intelligence as well as the accurate tactical intelligence. On the 1 to 10 scale, a rating of 8 for the *Mayaquez* reflects the intelligence available to enable tactical airpower to accomplish the assigned mission. The location of the ship and crew, as well as Cambodian gunboats, allowed the NCA to give accurate guidance to the military.

TIME

Time was only a minimal factor in the operation. Fighter units stationed in Thailand along with RF-4s, AC-

130s and special operations forces were quickly dispatched to the area. In addition, the USS *Coral Sea* and USS *Hancock* were sent to the area. However, both the *Coral Sea* and *Hancock* were too far away for immediate mission response. The task fell to the USAF assets in Thailand.[8] On Wednesday, the JCS discussed the possibility of waiting for additional forces to arrive and allow for more planning time, but their final decision was to begin an operation on the following morning.[9]

The simplicity of the USAF role in the operation and the intelligence available made the time required to plan and execute the mission less than the time available. The forward deployed forces simplified the time problem because they did not have to fly great distances to reach the target area. For their mission, keeping the ship out of a mainland port, time was adequate. However, tactical airpower failed to turn around the gunboat carrying the crew of the *Mayaquez*. Because of this, another operation was mounted to convince the Cambodians to release the ship and crew.[10] An overall rating of 9 for time available reflects the response time as well as planning time available for the fighter missions.

FORCE AVAILABILITY

At the time of the incident, the US commander in the region had no less than three fighter wings and a special operations wing under his direct command. In addition, B-52s stationed at Guam were put on alert for possible action

in support of the mission to free the ship and crew. The force array of over 100 aircraft, of which 72 were tactical fighters, proved to be more than a match for the known threat. Had the *Coral Sea* closed to within range, the number of tactical fighters would have risen by over 70%.

The forces available were capable of performing all tactical fighter missions. The F-4s were both air-to-air and air-to-ground capable. F-111s and A-7s provided additional air-to-ground capability while RF-4s provided reconnaissance. In this example, forward basing provided a complete array of firepower, resulting in a rating of 10.

LEVEL OF THREAT

The threat level was very low in the area having discounted the Cambodian Air Force, such as it was, and confident any display of support from the Vietnamese could be dealt with before the threat could reach the engagement area, the only real threat was small arms fire from the gunboats. A 50 caliber round through the tail of a P-3 confirmed that threat early in the crisis.[11] The low level of threat, combined with the high level of training the aircrews had received, many of them in the Vietnam conflict, results in a rating of 8.

COLLATERAL DAMAGE

At first look, the level of collateral damage possible seems very low in the *Mayaguez* incident. In fact,

although it was not high, the level of collateral damage allowed by the NCA was low. The President did not want the ship sunk, but he did want it kept from a mainland port with a minimum risk of life.[12] Although the ship was isolated, the ability to disable such a craft without sinking it and injuring as few people as possible is limited. Consequently, the decision to use only 20mm cannon and riot control agents as primary ordnance is logical. But as mentioned above, the force used was not adequate enough to turn around the gunboat carrying the crew and return them to the *Mayaquez*.

Overall, a rating of 7 for collateral damage reflects the limitations placed on ordnance and acceptable damage for the operation.

CRITERIA FOR SUCCESS

The objectives of the tactical airpower role in the crisis were to prevent the movement of the ship and crew to the mainland and collect more information on the situation. These objectives are clearly intended to stabilize the situation until the next step in the response can be formulated. Mets points out these steps were not intended to alter the behavior of the Cambodian government. By carefully controlling the level of violence, Mets says, the status quo could be maintained while limiting the collateral damage to the level required to attain that objective.[13]

It is possible the political objective, and the level of violence were too limited. Had the political

objective been to isolate the *Mayaquez* from the mainland and prevent the crew from being transported to captivity, airpower could have been effective. For example, if the order was given to sink or disable all craft approaching the *Mayaquez*, all craft around the captured vessel could have been kept at station keeping. Tactical fighters could have been effective at this mission. Sinking all approaching craft would have allowed more aggressive attacks, thus displaying stronger national will. It is possible the departing gunboat carrying the crew would have not attempted to leave if they saw their fellow gunboats being destroyed one by one.

The testimony of the ship's captain indicates the release of the crew actually began prior to the second phase of the operation, when the island of Koh Tang was invaded by the US Marines.[14] Had the objectives been more encompassing, the invasion of the island and bombing of the mainland, which caused a considerable amount of criticism in the aftermath, may not have been necessary at all. For these reasons, criteria for success is rated as 7.

AIR SUPERIORITY

Because of the lack of credible force available to the Cambodians and the low probability of intervention by the Vietnamese, air superiority was virtually guaranteed. The only threat to air operations was small arms and limited AAA. In this case, air superiority is rated as 9.5.

SURPRISE

For the tactical airpower part of the operation, surprise was not a factor. The constant presence of P-3s, followed by F-4, A-7 and F-111 aircraft over the area precluded surprise regarding the attack. However, the sheer weight of the US fighter presence in the area may have surprised the Cambodian leadership. At the time, the US had suffered setbacks including the USS *Pueblo* and the fall of Siagon. Our national pride had been injured and possibly national will diminished by recent events. However, the response of the President should have erased any doubt from the Cambodians' minds.

In this case, surprise is rated as a 8 because of the weight of the response and the fact that the amount of power available used was so overwhelming, surprise may have been unnecessary. If surprise was completely unimportant, a rating of 10 could be justified. But, recognizing the tactical importance of surprise in any operation, when surprise is potentially compromised, overwhelming power may offset it's loss.

RISK

The three risk factors are risk to US personnel, the risk to innocent personnel and the risk of failure. Because of the low threat, there was little risk to the aircrews; however, the risk to the crew of the *Mayaquez* was potentially nigh. The risk to innocent personnel was

practically zero. But the risk of failure and the risks OF failure were high.

As long as the level of violence could be controlled, the risk to US personnel could be kept low. In this case, the use of minimal violence may have kept the Cambodians from releasing the ship and crew as well. This tradeoff, as far as can be determined, was not presented to the President as an option.

The risk of failure to secure the release of the ship and crew, and the risk of loosing national prestige were high. In this case, inaction was potentially worse than action. As events unfolded, the objective of showing national will may have been as great or greater importance than freeing the ship and crew.[15]

Overall, the risk of the operation is rated as 8.5, reflecting a low risk to lives as well as a high risk to national prestige from inaction.

CONCLUSION

Clearly, the operation was a success. Even though the crew of the *Mayaquez* was taken to shore, the use of tactical airpower precluded the ship from being moved into the mainland port of Kompong Som. In addition, much of the evidence suggests the crew was released prior to the Marine invasion because of the effect tactical airpower had on the Cambodian leadership.[16] Only tne benefit of hindsight allows criticism of the criteria for success. The effect of

airpower was clearly greater than the NCA thought possible given the constraints.

THE ISRAELI RAID IN TUNISIA

On the 24th of September, 1985, members of the Palestine Liberation Organization attacked an Israeli owned yacht in Cyprus, killing three Israelis. According to the New York Times, that terrorist act brought the count of Israelis killed by agents of the PLO to 15 in September. On 1 October, 1985, the Israeli Air Force retaliated by attacking the PLO headquarters in Tunisia. The mission included F-15s and F-16s, flying a mission of over 1500 miles each way to attack the PLO headquarters and return with zero Israeli losses.

INTELLIGENCE

The Israeli intelligence network is renowned for its breadth and accuracy. However, certain data on exactly what the government knew must be extrapolated from the results.

Clearly, target location was known. The villa housing the PLO was a beach front resort among several owned by rich Palestinian refugees and Tunisians having formal ties to the PLO. The description of the area by the New York Times is not one of an armed camp, but a resort.[17] The resort atmosphere undoubtedly allowed intelligence gathering such as photography to occur with little if any notice by the inhabitants. Therefore, tactical intelligence was

available.

Strategic intelligence on the PLO most likely fills volumes in the Mossad reading room. The intent of PLO attacks on the people of Israel is certainly meant to cause terror, and the attacks on the PLO are equally intended to discourage terrorism. Knowledge of the movements made by the head of the PLO, Yasir Arafat, were somewhat less accurate, resulting in the raids failure to kill the PLO leader.[18]

Knowledge of the target area threat also appears accurate. No defenses were identified by the reporters on the scene, and no aircraft were reported missing as a result of ground fire. In addition, the threat to the mission from Libya's airbases must also have been known. Had the Libyan's known about the raid, in this author's opinion, they doubtless would have tried to interdict or delay the mission if possible.

The accurate destruction of the target and the inability of the PLO, Tunisians or Libyans to disrupt or halt the attack clearly point to accurate intelligence. In addition, the timing of the attack, corresponding with the visit by Arafat to his headquarters, cannot be considered a coincidence. The resulting rating for intelligence is 9.

TIME

The mission was flown six days after the deaths of the Israelis in Cyprus. More than adequate time was available to plan, and possibly rehearse the mission. Given

the nominal requirement of 48 hours to plan and rehearse the mission, the Israeli Air Force (IAF) should have been well prepared, assuming the target was selected relatively soon after the yacht incident.

The 1500 mile mission presented no real problems in terms of time to reach the target. The flying time one way was approximately 3 hours and 15 minutes, well within the criteria listed in chapter 2. Given certain precautions against detection, no more than 4 hours should have been required to execute the mission. Those precautions might have involved flying further north and at a lower altitude to avoid detection by radar.

The proximity of the target, the time to plan and possibly rehearse the mission, and the quickness with which airpower could attack and egress the target make this raid ideal for tactical airpower. In addition, the time of day of the attack was well chosen. By attacking in the late morning, the sun was behind the IAF attack group as they approached the target. The advantage of selecting the time and place of attack is particularly well suited to airpower. The resulting rating is 10.

FORCE AVAILABILITY

The Israeli Air Force in 1985 consisted of US built F-16, F-15, F-4 and Israeli built Kfir fighters. All fighters have the inflight refueling capability necessary for a mission of this length. Unlike a US raid in the same

area, an Israeli raid in Tunsia is practically in their neighborhood. A commensurate distance for US fighters would be flying from Langley AFB in Virginia to Luke AFB in Arizonia. In this example, force availability rates a 10.

LEVEL OF THREAT

The level of threat in this scenario increases when considering the proximity of Libya. Target area defenses were most likely few due to the distance from the nearest airfield and the description of the resort in the media, as was the probability of a timely response from the Tunisian Air Forces. However, the threat from Libyan Air Forces was real. The surface to air missile sites in Libya could have easily been avoided by flying further out to sea or at a low altitude, but avoiding the air defense assets was undoubtedly risky.

Given the performance of Libyan pilots in engagements against US Navy pilots and the proven capability of the IAF to defend themselves in the air-to-air arena, the level of threat rating is 7. This number reflects not the ability of the Libyan pilots or the airplanes, but the potential for the mission to be disrupted. An air attack on the IAF force would possibly have resulted in the Israelis jettisoning their bombs and returning to base without striking the target.

COLLATERAL DAMAGE

The level of collateral damage allowed by the government of Israel is unknown. Clearly, some collateral damage was acceptable, though, as evidenced in the remarks made by Israel's Ambassador to France in the aftermath of the raid. Mr. Ovadia Sofer said the government of Israel "...had nothing against Tunisia,..." but added "The PLO headquarters are protected by Tunisia, and the country bears some responsibility for the raid."[19]

The New York Times reported two private homes were destroyed in the attack, as well as at least 50 civilian casualties. The point is not the actual numbers, but rather the acceptability of the collateral damage. The question decision makers must answer is: what level can be reasonably expected and tolerated? It is up to the nations leaders to determine acceptability. In this case, the judgment of the Israeli leadership may never be known. Collateral damage is rated 8 because of the isolation of the target and potential for minimizing injury to non-combatants.

CRITERIA FOR SUCCESS

The objective of the political leadership of Israel was to show the PLO and other terrorist groups that they were not safe anywhere from Israeli punishment. In 1982, Arafat moved his headquarters from Lebanon to Tunisia when the Israelis invaded. In the years that followed, according

to the government, the PLO was "...carrying out guerrilla operations against Israel while talking about entering peace negotiations."[20] Clearly, an attack on the headquarters of the PLO achieved both goals.

It is noteworthy that the Israeli objective was not to discourage further attacks. Not one interview with the government reported an Israeli goal of deterring further terrorism. The goal of showing that "Crime doesn't pay" is a close second but lacks deterrence. The Israelis have never defended their use of power against terrorists as a deterrent against further attacks. If air or ground strikes against terrorist forces were a deterrent, terrorism would be all but extinct today. Clearly, the use of airpower alone is not a deterrent, but is a clear signal of national will. That national will is the commitment to retaliate against acts of violence aimed toward the citizens of the state. Because the government was willing to limit their goals for the operation to the tactical and, in part, to the operational level, they deserve a rating of 9. This number reflects the government's limited goals as well as an obviously clear statement of the objective to the military.

AIR SUPERIORITY

For whatever reason, be it lack of a credible threat or complete surprise disenabling a response, the IAF had air superiority for their attack on the PLO headquarters. As

mentioned above, air superiority gives the attacker freedom of action required to locate and attack the target.

To preclude intervention by the Libyan Air Force, the IAF most likely planned a contingent of F-15s in the force package of fighters. The mission of this flight would be to intercept and delay or destroy the Libyan aircraft while the air-to-ground component of the package continued to the target. The requirement for air refueling assets also would have resulted in a flight of fighters to protect the tankers. Given the state of the IAF, air superiority was clearly achievable. Due to the unknowns involved in air-to-air combat, air superiority is rated a 9.

SURPRISE

It is obvious the IAF achieved tactical surprise with this operation. The attack was timed perfectly. By waiting six days before attacking, the Israeli government may have convinced the PLO retribution would not occur. One reason the IAF achieves such surprise in it's operations is the way plans are made and executed. This author had the opportunity to interview several IAF pilots. They told me they often have missions to fly as part of a larger plan, but they are given no knowledge of the overall plan, its objectives or the other elements of power taking part. This fragmented approach to mission execution is not practiced in the USAF, but seems to work well for the IAF.

By achieving surprise, the IAF enhanced their air superiority, minimized th. required force necessary to service the target while accounting for the threat and lessened the risk to their pilots. The rating for the Tunisia raid in surprise is a 10.

RISK

Risk is rated as 8 for this operation. Given the necessary intelligence and proficiency of the pilots, the risk of failure was low. With the advantage of surprise and the relative lack of a credible threat, the risk to IAF pilots was also low.

There was a risk that the United States would not support the action. In 1981, when the IAF destroyed the nuclear reactor outside of Bagdad, the Reagan Administration severely criticized the attack and stopped delivery of F-16 and F-15 fighters to Israel. The foreign sales laws ban any attacks using US made equipment except in self-defense.[21] If the Israeli government could not have proved the PLO was responsible for the Cyprus killings, they would risk more than verbal condemnation, but again having their major source of military hardware cut off. Given the capture of 11 PLO terrorists after the Cyprus affair, the risk was low.

CONCLUSION

The overall rating of 8.9 for the raid on Tunisia

makes a compelling argument for an optimum scenario for tactical airpower in contingency operations. However, the reader should be cautious because of the large number of assumptions required to rate the operation. In addition, the Israeli government may weigh factors such as collateral damage differently than the United States.

Nevertheless, this attack served a valid purpose for the government. By demonstrating the possibilities for reprisal within even liberal constraints, tactical airpower was the perfect weapon for the job.

THE US NAVY'S ATTACK ON SYRIAN ANTI-AIRCRAFT POSITIONS

On 28 August 1983, US Marines stationed in Beirut Lebanon returned fire for the first time since being stationed in a peacekeeping role. The next day, two Marines were killed and 14 wounded as the fighting continued. On 25 October, 216 Marines were killed when a terrorist truck bomb leveled the Marine headquarters. Saturday, 28 November, U.S. reconnaissance aircraft were fired on by Syrian antiaircraft batteries. In response to the most recent attacks, the United States launched a 28 aircraft attack on the Syrian positions on Friday, 4 December.[22] The result of the air attacks was the destruction of ammunition dumps, trucks and 2 Syrian soldiers killed, and two American aircraft lost (one pilot killed, one captured by the Syrians).[23] The sites were not eliminated.

INTELLIGENCE

At the time of the air raid, the U.S. had been in Beirut for almost 18 months. The degree of intelligence on the defenses in the area was doubtless accurate. Given the requirement for accurate photography, many opportunities existed for both satellite and aircraft reconnaissance to collect the required data. In addition, opportunities for collecting signal intelligence were most likely frequent.

In this particular case, the threat was the target. In many ways this both simplifies and complicates the task at hand. Avoiding the threat is the easiest way to avoid being shot down. In this case, if the pilots could remain at a safe altitude above the target area, they would be safe. However, if the target is difficult to locate, and also a threat to the aircraft, remaining in the area long enough to locate and attack exposes the pilot to more risk.

Also, the Syrian gunners were experienced soldiers. After years of war in Lebanon, several air strikes by the Israeli Air Force and some amount of target practice against American reconnaissance; the Syrians could not be ignored. The threat from AAA is real, as evidenced by the mission results.

Although actual data on the availability of intelligence to the pilots is not attainable, a reasonable assumption is that it was more than adequate. Intelligence is rated as 8.

FORCE AVAILABILITY

The forces on board the two carriers, USS *Independence* and USS *John F. Kennedy* included over 140 aircraft. Each carrier wing has a wide cross section of aircraft to support any contingency. The trade off is obviously the lack of massive firepower, hence the use of attack aircraft from both carriers. However, the mission was most likely supported by air-to-air assets from one or both carriers as well.

Destroying an unprotected AAA site would normally require 4 to 8 aircraft. Since the two targets were separated by several miles, most likely the raid consisted of 12 to 16 attack aircraft and 6 to 10 air escorts. Consequently, forces available for the mission were more than adequate from a targeting standpoint. A rating of 9 is appropriate.

TIME

The time available to plan and execute the mission rates a high mark. The administration did not rush into the decision to attack, but took almost a full week before executing the attack. Once the specific targets were located, increased intelligence could have been collected for the attack.

Distance to the target and mission time were not a factor. The task force was located directly off the coast of Lebanon, within minutes of the target by air.

The rating for time suffers, though, when considering the time of day picked for the attack. The early morning attack was the worst possible time, including night, for such a mission. The attack package was looking into the sun from the time they took off until arriving over the target. In addition, the sites were located on the west side of a mountain range, near the village of Hammana.[24] In the early morning, the target would be covered in shadow, barely visible unless marked by another aircraft.[25] The lack of planning to account for the sun angle, time of day, is completely unacceptable, but the reason is unknown. Time is rated as 6 to account for the positive aspects of mission planning and the close proximity of the carriers to the target as well as the poor choice of the early morning time over target. In some ways, the opportunity to select a more advantageous time to attack may seem to outweigh the planning time, but the advantage of hindsight was not available to the planners.

LEVEL OF THREAT

The threat level consisted of experienced Syrian gunners and potentially deadly surface-to-air missiles in the area, several of which were reported fired against the F-14 reconnaissance aircraft days before. In addition, the ability of Syrian MiGs to reach the target and respond should not have been discounted. However, the density of

the threat was probably low, given the recent Israeli attacks on nearby sites just days earlier.[26]

This author would have rated the threat as 9, given the intelligence available and the assets possessed by the Navy. This judgment would have been in error, as evidenced by the two lost aircraft.

COLLATERAL DAMAGE

The probability for collateral damage from the air attack on the Syrian positions was very low. The targets were in mountainous areas, overlooking the city of Beirut. Some small villages are near the sites, but no major population centers are nearby. Even with unguided munitions, a precise strike to eliminate the AAA positions was possible, assuming the pilots could locate the target.

What could not be predicted was the damage done by the A-6E that was shot down. The aircraft landed in one of the nearby villages and destroyed a house and damaged another. The crashing A-7 missed a residential area, but the resulting explosion destroyed several cars and damaged homes nearby. The aspect of falling wreckage that moments ago was a modern jet fighter is rarely considered in the argument over collateral damage. In this authors opinion, it simply cannot be accounted for due to the dynamics of aeronautics and the effects uncountable degrees of damage can do to the airworthiness of the airplane. If an aircraft is a guided machine, controlled by the laws of aerodynamics

and the pilot, a damaged aircraft is therefore unguided when those laws and the pilot are not present.

A pilot who's F-16 engine literally came apart in flight had time to aim the jet into a barren area prior to ejecting. After he departed the aircraft and was floating to the ground, he witnessed the jet slowly turn toward a highway and impact close to the road. After his rescue, he said, "Once you eject, it does not matter where you aim it, it's in Gods hands."[27]

Given the situation prior to the attack, the probability of collateral damage would be low. A rating of 8 is appropriate.

CRITERIA FOR SUCCESS

If any one area can be faulted in the operation to destroy AAA sites in Lebanon, it is the mission objectives or criteria for success. On the surface, the mission objectives were clear. The President said the U.S. would not stand for attacks against its aircraft and would react to defend U.S. personnel.[28] The message was clear, if a ground unit fired on American jets, the offending unit would be attacked for the offense.

However, an unpublished study by a US Navy Commander maintains the objectives were more complicated and less clear than reported in the papers. Commander Dodds says the objectives were ill-defined. Confusion existed over the mission. More than taking out the offending AAA sites, the

mission was a show of force to impress the Syrians, and the world, that the United States was not to be trifled with. Dodds makes a compelling argument that if the objective were only to respond to the firing at F-14 overflights, Naval gunfire could handle the job quite nicely. In fact, since the raid failed to silence the offending sites, two days later the sites were eliminated.[29]

The political objective was therefore not defined. The specific planning sequence is not known. However if the planners reached the conclusion that an airborne armada was required to do the job that a battleship's 16 inch guns were designed for, then either the planners were given other guidance to begin with or they failed to analyze the threat situation. The difference is clear. If the objective was to eliminate the sites, other means were available. However, if the objective was to show American power and determination, both legitimate goals, an air strike may have been an appropriate tool, given limits on the duration and type of attacks flown.

In part, the lack of clear objectives contributed to the failure of the mission. Criteria for success is rated as 3.

AIR SUPERIORITY

The fact that two aircraft were shot down is clear evidence air superiority was not achieved. However, that does not mean air superiority was not achievable. The known

AAA and surface-to-air missile sites were a threat to air superiority. Since the missiles were SA-7s, hand held and man transportable, their positions could not be determined with any accuracy. However, tactics to counter these weapons are well known. The Soviets used medium to high altitude tactics and self-defense flares in Afghanistan to counter American made Stinger missiles, a close cousin to the SA-7.[30] In addition, limits to time allowed over the target area would enhance survival as would a bottom limit on altitude and airspeed. The altitude and airspeed limits would ensure aircraft had adequate reaction time sufficient maneuverability to defeat an attack.

The threat Syrian MiGs must also have been considered. Given the historically poor record of the Syrian pilots in air-to-air combat against the Israelis; carrier based aviation would have had little difficulty handling a Syrian response had the Syrian government taken the risk. However, threat capabilities should never be assumed away. A response force capable or deterring an airborne attack was most likely launched or was sitting alert, ready for any MiGs which might intervene. These precautions would have been necessary to achieve air superiority and defend U.S. fighters if necessary.

In sum, air superiority was achievable and deserves a rating of 9.

SURPRISE

If the Israelis achieved tactical surprise on the

Tunisia raid, the U.S. Navy achieved the opposite. Not that surprise could not have been achieved, but no attempt was made to deceive the Syrians as to the events as they unfolded.

Commander Dodds reports poor planning was once again to blame for the lack of surprise. The aircraft took off from the carriers, formed up their flights and proceeded to the target in full view of the Syrian ground based radars. A long chain of jets followed the same flight path toward the coast (into the sun) and flew into the target area.[31] The Syrians could not have known the precise target area, but they had ample time to alert their defenses for the coming attack.

Had the planners run several feints, used jamming to shut down the radars for several days prior to the attack or chosen several routes, some degree of surprise may have been possible. Without adequate surprise, the gunners and SA-7 operators were at their maximum readiness. Surprise rates a 3.

RISK

Risk of failure was the highest risk in this operation. Using our technological superiority to pound a few AAA sites into rubble may have been overkill, if successful. The failure of the mission accomplished *exactly* the opposite from the intended effect.

The Administration put the best possible face on the events of 4 December. President Reagan reaffirmed the U.S.

right to protect its forces in the region, and declared the U.S. would strike again if challenged.[32] However, the fact that two aircraft were lost, one pilot killed, AND the sites not eliminated clearly indicate failure.

A clear distinction must be made between success and failure of a mission regarding the cost in lives of U.S. servicemen. A successful mission will involve risk to U.S. personnel. All members of the armed forces sign up with the understanding they may have to risk their lives in defense of the nation. If lives are lost in a worthy cause, a victorious effort, the nation may grimace, but probably understand that such risks are necessary in the pursuit of our national interests. However, risking lives of Americans unnecessarily, in an effort to boost international prestige, may result in a backlash of public support if lives are lost or the true intentions of the government become public knowledge.

The risk on this mission, even given the constraints imposed on execution, were acceptable. Sufficient data on threat capabilities and adequately trained crews were available. The risk of failure of the mission is rated as 6.

CONCLUSION

The mission to eliminate Syrian AAA positions, as planned and executed, was not a good use of tactical airpower for three reasons. Primarily, the ill-defined objectives of the mission led to a higher risk than necessary. In addition, for whatever reason, the time of

day selected for the attack put not only success of the mission at risk, but the lives of the aircrew as well. Finally, the problems above may have had a lesser impact if the forces had, or had been allowed to use surprise to increase their tactical advantage.

OPERATION EL DORADO CANYON

On 28 October, 1969, Colonel Muammar al-Qaddafi, former Army lieutenant and newly appointed leader of the Libyan Revolutionary Council, announced Libyas intention to go to war to force the United States and other "colonial states" to leave their bases in Libya.[33] As soon as the evacuation of Wheelus AFB was complete, Colonel Qaddafi declared no friendly relations between Libya and the U.S. were possible as long as the U.S. continued to support the government of Israel.[34] So began the downturn in relations between the United States and Libya, in the form of Colonel Qaddafi.

Several incidents led up to the attack named Operation El Dorado Canyon. In the early 1970s Qaddafi supported several terrorist organizations. He has been directly linked to funding, training and providing weapons for the 1972 Olympic Games massacre in Munich.[35] His terrorist training camps at Sirte, Sebha, Az Zoulah and Raz Hilal worried the United States enough to begin surveillance flights into the Gulf of Sidra in 1972.[36]

In 1979, after years of the Carter Administration trying to tip toe around the problem, a crowd of 2,000 attacked the U.S. embassy in Tripoli. The government did not intervene or try to protect the Americans there.[37] Several intercepts of U.S. surveillance aircraft were attempted over the Gulf of Sidra, and then in October 1980 Qaddafi took out a full page advertisement in the Washington Post warning the United States to get out of the Middle East.[38] This brashness would prove dangerous for Qaddafi with the election of President Reagan.

Relations between the U.S. and Qaddafi continued to worsen in the 1980s. Rumors of a Libyan "hit squad" targeting President Reagan and other less than diplomatic initiatives by Qaddafi caused the Administration to consider the Libyan leader as less of a nuisance and more of a threat.[39] In September 1984, Qaddafi announced his support for the Sandinistas in Nicaragua by sending troops and arms to aid in the fight against the U.S. backed Contra rebels.[40] In July 1985, President Reagan branded Libya and four other nations as members of a "...confederation of terrorist states" carrying out "outright acts of war" against the United States.[41] As if to answer the charge, the group Abu Nidal, sponsored by Qaddafi, carried out bloody attacks against Israeli airline passengers in Rome and Vienna airports on 30 December 1985. The Reagan Administration directly accused Libya of supporting the raids and called for international pressure on Libya to stop the export of

terrorism. In January, the Administration froze all Libyan assets in the U.S., ordering all U.S. citizens to leave Libya and imposed trade and commercial sanctions against Qaddafi's government.[42] In early April 1985, Qaddafi sponsored the bombing of a West Berlin discotheque, killing two people (one an American soldier) and injuring over 200 (60 Americans). This last event touched off the attack by USAF and Navy fighters, El Dorado Canyon.

INTELLIGENCE

Obtaining adequate and accurate intelligence for the operation, as evidenced by the results, was not an obstacle in planning for El Dorado Canyon. Given the objectives set down by the national command authority, USCINCEUR nominated various targets for the operation to the Secretary of Defense. After the targets were endorsed by the JCS, the President approved the list on 9 April 1986.[43]

The amount of detail released by the government about the targets indicates the amount and quality of tactical intelligence available for mission planning. In Tripoli, the Tarabulas (Aziziyah) Barracks was selected because not only did it serve as a command and control center, but was frequently used to support terrorist operations. Coincidentally, it also served as Qaddafi's primary residence.[44] Also in Tripoli, the Sidi Bilal Military Complex, which provided terrorists underwater sabotage training, and the International Airport ramp where

IL-76 Candid transport aircraft were parked were targeted.[45] In Benghazi, the Military Barracks and the Benina Military Airfield were attacked. The Military Barracks housed some of Qaddafi's elite guard and served as housing for terrorists. The airfield was a MiG-23 fighter base, attacked to preempt a counterattack and ensure air superiority.[46]

The level of intelligence on threat capabilities was impressive as well. For over 18 months, the U.S. Navy had been operating in the Gulf of Sidra, intercepting Libyan MiGs and in fact shooting down one flight.[47] Targeting of Libyan surface-to-air missile sights also indicates a high level of tactical intelligence.[48] In addition, since the majority of Libyan military capabilities were Soviet in design, it is valid to assume all knowledge of Soviet systems and capabilities were useful to the planners of the mission.

The assertion that accurate intelligence leads to target destruction and survival of the aircrews performing the mission, made in chapter 3, is proven by the results of the mission. All targets were hit, most destroyed, and the only casualties were one aircraft and its crew of two. The Libyan defenses were impressive by any account, but intelligence coupled with surprise no doubt minimized the number of casualties while ensuring success. For these reasons, this author would rate intelligence as 9 for El Dorado Canyon.

TIME

Time was a major factor in planning the strike on Libya. The NCA gave the operators adequate time to select, nominate and plan the strikes for several target sets. As noted above, the President approved the targets several days prior to the raid. What is unknown, and may never be revealed because of possible political repercussions, is whether the F-111s and Navy aircraft were given the opportunity to rehearse the mission prior to execution. Without a doubt, such a rehearsal would have aided the crews. If there was no rehearsal for security reasons, it is testimony to the skills of the planners and aircrews that the mission was such a success.

Flying time to the target and the time of day for the attack were also important considerations. The total time to the target area was approximately 6 hours and 30 minutes for the F-111s, (about one and three quarters of an hour for Naval Aviation assets). As discussed above, this amount of time for the aircrews is not excessive and well within most pilots capabilities. However, a compounding factor was the time of day. The attack occurred at just after 2:00 AM Tripoli time, requiring a launch just after sunset from the F-111s base in the United Kingdom.[49] This would have the effect of having the crews awake for as much as 20 hours if they had maintained a normal schedule. Although the crews were most likely brought in only hours prior to the scheduled takeoff, their normal daily routine

most likely precluded much rest since their bodies and circadian cycle were adapted for daytime duties.

The important point for time of day, however, is not the level of fatigue for the pilots, but for the Libyans. At 2 AM the Libyan defense crews were undoubtedly having a much more difficult time remaining awake then the crews of the incoming fighters. The tradeoff between the surprise achieved and fatigue for the crews executing the mission clearly points toward selecting 2 AM for the time over target. Overall, time for the operation is rated 8 because of the advantages gained within flying time constraints of attacking in the early hours of the day.

FORCE AVAILABILITY

The discussion of Force Availability in chapter three uses Operation El Dorado Canyon as the example of adequate force. It was no accident the Navy was told to position the USS *Saratoga, Coral Sea,* and *America* three weeks prior to the attack. The capabilities for suppression of Libyan surface-to-missile systems available on the carriers, as well as the air defense assets integral to carrier air wings greatly enhanced the overall power of the forces arrayed. Also, as previously mentioned, the over-riding factor was the need for aircraft capable of attacking at night. The Navy and F-111 assets selected fit this requirement exactly. All of these factors lead to the rating of 10 for force availability. In fact, there was no

capability or amount of airpower found wanting in the operation.

LEVEL OF THREAT

The level of threat for this mission was high. Rating the level of threat for an array of surface-to-air missile and AAA systems ranging from the SA-2, -3, -6, -8 through the ZSU 23/4 must include the operators capabilities as well as the potential for surprise, as discussed later. The answer lies in the tactics planned for the mission.

Tactics are a way of employing combat systems in an arena to maximize their capabilities in light of the strengths of the enemy. In other words, don't meet the enemy on his ground if you can force him to play by your rules. The tactics used in El Dorado Canyon maximized U.S. capabilities while minimizing those of the Libyans. Night attack is only one way of using an advantage. Another is electronic jamming. Without doubt, some electronic jamming was used to confuse or obfuscate threat radars. In addition, low altitude ingress tactics and standoff weapons lessened the threat by decreasing the reaction time available to the operators on the ground. The entire attack took less than twelve minutes, hardly enough time for the gunners to reload had they even been able to fire at all.[50]

Therefore, the level of threat, although high when considered alone, can be rated as 7. This rating reflects the surprise of the plan as well as the level of training of the U.S. crews conducting the mission. The F-111 and Navy

crews were doing a mission they train for each day. Tactics were used to minimize the risk to American aircrews, while taking advantage of our technological superiority. Although the level of threat was not optimal, in this author's opinion, it was acceptable for the operation.

COLLATERAL DAMAGE

One of the objectives of the mission was to minimize collateral damage. The feeling in Washington was that heavy collateral damage would portray the U.S. as no better than the terrorists we were trying to deter.[51] In addition, the lack of collateral damage would undoubtedly do much to enhance the view of the U.S. as a power capable of selective targeting against our enemies. The probability for collateral damage was kept as low as possible by constraining the crews ability to deliver weapons. The F-111s could only drop their bombs if the target was identified on the radar and on the Forward-Looking Infrared (FLIR) system.[52] Pictures from the FLIR of the F-111 were shown on national television days after the attack.

These constraints were intended to keep the probability for collateral damage as low as possible while still allowing the crews sufficient data to hit the targets. In light of the pre-mission constraints, this author would have rated the probability for collateral damage as 8. A perfect rating is not possible because the targets were located within cities, and additionally, the aircraft had to

fly over untargeted areas in order to reach their objectives. These facts increase the chance collateral damage may occur due to reasons beyond the control of the aircrews or unforeseen by the planners.

CRITERIA FOR SUCCESS

In his monograph titled, "Libyan State Sponsored Terrorism-What Did Operation El Dorado Canyon Accomplish?", Major Gregory L. Trebon stated overall U.S. objectives were "...more psychological than tactical...more political than military." Hitting the terrorist support facilities "...would only put a small dent in the total Libyan terrorist infastructure."

The purpose of the mission, as President Reagan stated, was "...not only (to) diminish Colonel Qaddafi's ability to export terror" but also "provide him with incentives and reasons to alter his criminal behavior."[53] Clearly, the military objective was to demonstrate U.S. resolve and determination not to be the targets of indiscriminate attack by Libyan supported organizations.

The targeting of the terrorist training areas, and their identification to the world was also a clear signal to Qaddafi. By telling the world and the Libyan leader we knew exactly what we were hitting, the U.S. sent a message to Qaddafi that he could not hide from our intelligence, or our military should we choose to strike back. In addition, the

success of the raid would punctuate the statement with "...and you can't do a thing about it."

Although the debate over sub-objectives like the elimination of Colonel Qaddafi or the ignition of the flame of revolution in Libya continue to this day, the *military* objectives were clear. Criteria for success rates a 10 because the clarity of the goals and the limits for military power application were clear and precise.

AIR SUPERIORITY

The interaction between intelligence, threat capabilities and predicting our ability to attain air superiority is most clearly seen in Operation El Dorado Canyon. Force availability, threat and tactics combine in the rating of air superiority as 8.

Force availability regarding the ability to attain air superiority is the most important factor. The forces chosen include EF-111 jamming aircraft used to deny ground based radars information to vector MiGs against the strike force as well as information for surface-to-air missile sites to target American fighters. Also, the Navy provided F/A-18 and A-7 assets for suppression of the SAM sites with anti-radiation missiles. The F-18s, as well as F-14s were close enough to also provide air-to-air intercept of any Libyan aircraft which chose to challenge the strike package.[54]

Knowledge of the threat was the second important factor. As noted above, the Libyans were primarily supplied

by the Soviet Union. Knowing what systems were available and their capabilities undoubtedly allowed U.S. planners to isolate any known weaknesses and exploit them. In addition, the operators had never been under fire before. The lack of combat experience combined with the level of realistic training U.S. forces are known for served to lessen the threat as well.

Finally, the tactics selected optimized U.S. capabilities. Night attack is an area U.S. military planners have focused on for many years. The F-111 was designed for night attack and first used in the Vietnam War. Use of jamming and surprise to "shock" the Libyan system, while getting all of the attack package in and out of the target area in minimum time also enhanced air superiority.

SURPRISE

Much of the military analysis of this operation has centered around surprise. Clearly, the planning process was oriented toward accomplishing this goal. Although the attack may not have been a complete strategic surprise to many observers, the tactical surprise achieved is evidenced by several factors.

As the attack was beginning, all the lights of Tripoli were on and remained on for some time. The inability of the government to get a blackout order to the citizens may not indicate surprise in every aspect, but clearly initial surprise was achieved.[55]

Another indicator of surprise was the complete lack of response by the Libyan Air Force. The Libyans did not attempt one launch of a fighter, even after the attackers were gone.[56] Although this may be a limitation of their training, it also shows they had little or no warning of the impending attack.

Finally, had the Libyans known about the attack they would have undoubtedly moved their IL-76 transports either into hangars or to other airfields. The fact the transports were lined up wingtip to wingtip as the F-111s released their weapons is a clear indicator surprise was achieved. In addition, a prudent commander would have had interceptors either on alert or airborne to respond to an attack.

Surprise was achieved through a combination of operational security and tactics. The operational security measures were not without some holes, as seen by the attempt to "get the Libyan government's reaction" to the impending strike by the reporter for Soldier of Fortune. However, what was lost by a few loose tongues may have been offset by the tactics employed. The low altitude flight, air refueling and strict adherence to timing criteria all contributed toward tactical surprise. Because of the threat, and the tensions between the two nations leading up to the attack, Surprise is rated as 8.

RISK

Risk to the operation is rated as 8 because the forces used and the intelligence available made the

objectives achievable. In addition, the tactics used, timing for the attack as well as the force structure allowed the effect of surprise to be on the U.S. side.

The risk to collateral damage was low because of the strict criteria for weapons release and the selection of targets which could be identified and attacked without damage to nearby facilities. In addition, the early morning time over target ensured most civilians would be at home, safely away from the facilities attacked. This somewhat painstaking process is essential for not only limiting the collateral damage, but also for showing the American people how much trouble the national command authority went through to limit the potential for collateral damage.

The risk to American lives was as low as possible given the defense array of the Libyans and the offsetting tactics and forces used to attain air superiority. By carefully analyzing the threat in light of U.S. capabilities, the risk to American servicemen was kept to a minimum.

CONCLUSION

Operation El Dorado Canyon was a tactical success. The mission resulted in the destruction of the assigned targets, a demonstration of U.S. resolve and capability, and the support of the American people.[57] All elements of the mission contributed to success, with no real detractors evident. The overall rating of 8.4 reflects a mission tactical fighters should be capable of performing, in fact a

mission with few detractors. Only the high level of threat was rated outside of the optimum criteria, reflecting the intense amount, not necessarily the training of the systems and operators.

The matrix for all four case studies is below. Discussion of the lessons learned from the matrix is the subject of Chapter 5.

CRITERIA FOR SUCCESS MATRIX

	MAYAQUEZ	TUNISIA	SYRIAN AAA SITES	LIBYA	AVERAGE
INTELLIGENCE	7.5	9	8	9	8.4
FORCE AVAIL.	10	10	9	10	9.8
THREAT	8	7	9	7	7.8
COLLATERAL DAMAGE	7	8	8	8	7.8
OBJECTIVE	7	9	3	10	7.3
TIME	9	10	6	8	8.3
AIR SUPERIORITY	9.5	9	9	8	8.9
SURPRISE	8	10	3	8	7.0
RISK	8.5	8	6	8	7.6
SCENARIO RATING	8.3	8.9	6.8	8.4	

Table 2

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CHAPTER FIVE

THE MILITARY INSTRUMENT OF POWER: FROM THE AIR

We have the enemy surrounded. We are dug in and have overwhelming numbers. But enemy airpower is mauling us badly. We will have to withdraw.

-Japanese infantry commander, situation report to headquarters, Burma, World War II

The use of high performance fighters in Contingency Operations is not a new technique for governments desiring to influence other nations, or groups. Historically, the United States, Israel, France, the United Kingdom and many other nations have used fighter aircraft to persuade, cajole or respond to the actions of other countries. In some instances, tactical fighters have been the tool of choice for the decision maker desiring to hit quickly, precisely and violently. The risks of employing military force, any force, are inherent in tactical aviation as well as SOF or any other arm of the services.

This thesis answers the question: Is there an Optimum role for tactical fighters in Contingency Operations? Clearly, the answer is yes.

The optimum scenario for the employment of tactical fighters must include elements from the decision matrix formed in Chapter 4. Although the weighting of the factors may vary from analyst to analyst, the resulting figure in the Risk column reflects the overall chances for success in a given conflict.

The inherent capabilities of tactical fighters facilitate their use in certain operations. These capabilities include speed, range, firepower and flexibility. The ability of tactical aviation to deal effectively with most probable threat scenarios while accomplishing their mission is their strongest asset. This firepower capability, including air-to-air and air-to-surface ordnance delivery differentiate fighters from bombers and SOF assets. Therefore, a situation consisting of a target to be attacked, defended by surface-to-air defenses and/or air-to-air fighters calls for tactical aviation, at least in part, to accomplish the mission.

Each category of the matrix instructs the planner to consider the alternatives and collect the data to ensure tactical fighters are, in fact, the military force of choice for the mission in question.

Not all situations call for the use of tactical fighters. The situations described in chapter 4 cover the spectrum from optimal situations to failures regarding the use of fighters in contingency operations. The only case study which may be listed as a failure is the attack on the

Syrian AAA sites. By briefly comparing the successful attacks to the Syrian mission in each area, the differences between the optimum use of tactical fighters and less than ideal scenarios for these forces are highlighted.

ACCESS TO INTELLIGENCE

In each case study, military forces had access to at least adequate intelligence. Even in the *Mayaquez* incident, intelligence was available after a period of time. The assumptions necessary to rate intelligence for the Israeli raid on the PLO headquarters in Tunisia are acceptable in light of the results of the raid. What may have been lacking in the attack on the Syrian AAA sites is not tactical intelligence, but strategic intelligence.

Had the NCA set the objective as changing the attitude of the Syrian leadership to discourage further attacks, intelligence may have provided a more suitable target. Hitting an expensive command and control site or headquarters may have convinced the Syrians to halt their attacks on U.S. aircraft. But by treating the symptom instead of the cause, that is to say, attacking the sites which fired upon American fighters, did not necessarily achieve the desired objective. If all the President wanted to do was punish the offending sites, then, as described above, naval gunfire would have been sufficient.

The attack on Tunisia and El Dorado Canyon are excellent examples of intelligence pointing the way for

political goals. Both attacks used available intelligence not to alter the relative balance of power, but to send a message to the enemy decision maker. The Israelis wanted the PLO to know their acts would not go unpunished, no matter where they may hide. President Reagan wanted Qaddafi to know the United States would not allow the war of terrorism to continue without response. Neither attack changed the relative balance of forces. But when intelligence was used to properly identify potential targets to achieve the desired goal, it contributed to the success of the mission.

FORCE AVAILABILITY AND THREAT

Each case study rates high in force availability. The failure of the Syrian raid cannot be attributed to the forces employed. However, tactics employed to counter the known threat may be the only failing.

One assumption planners should be wary of when building a force package for a mission is assuming a capability for the pilots based on *aircraft* capabilities. As discussed in chapter 3, training of the force is critical for certain missions. The higher the threat, or the more capable the threat, even if only in a certain regime, the higher the requirement for tactics to avoid or counter enemy capabilities. The Syrian SA-7 missile is a small, first generation hand-held SAM. In a restricted envelope, however, the SA-7 can be lethal. Correct tactical execution

to avoid the SA-7 envelope may have resulted in the survival of both Navy aircraft and their aircrews. The aircraft were capable of executing tactics outside of the SA-7 envelope, but for reasons unknown, the pilots did not. Training may have been lacking in this particular instance.

It is important to note the author's rating of Threat in the matrix for Syrian AAA sites is a 9 out of 10. This score reflects known capabilities to avoid the threat given average training for the crews and the limited envelope of the threat. Nonetheless, two aircraft were shot down. Simply dismissing these losses to the "Fog of War" misses the point. Correct tactics designed to avoid the threat must be employed if the rating is to have any meaning.

COLLATERAL DAMAGE

In each case study, collateral damage was a factor. Only the *Mayaquez* incident had a slightly higher chance for collateral damage. A valid argument can be made that the NCA criteria for collateral damage was so restrictive it caused the use of tactical fighters to be less effective. The command to only disable the *Mayaquez* may not have been achievable with the systems and ordnance available. Clearly, the threat of force did not deter the Khmers from taking the crew of the ship to a holding area on land. In this author's opinion, the order to only disable the ship resulted from inadequate knowledge of tactical airs

capabilities. Once ordnance is delivered on a target, especially one carrying fuel and other combustables, the level of damage becomes impossible to control or predict.

OBJECTIVE

As pointed out in chapter 4, the failure of the raid on Syrian positions failed in part due to the ill-defined objectives given to the Navy. By way of contrast, the next major event for the same administration was a success, in part, because the objectives were clear and achievable. Operation El Dorado Canyon guidance indicated the desire to not destroy the terrorism support structure, but to send a clear message to Qaddafi. By isolating the terrorist facilities and Qaddafi's headquarters, the President gave notice he not only would not tolerate further terrorist actions sponsored by Qaddafi, but he also knew where the Libyan leader "lived".

It is the dual responsibility of the decision maker and his military advisors to ensure the objective is clear and achievable. Any misunderstanding in the chain of command as to the real end-state, the definable objective to be accomplished, runs the risk of failure for the mission. The lofty discussions of the benefits and burdens of military force application to particular scenarios so often heard in the media have no place in the brutally real world, where objectives and goals are transformed into violent actions.

AIR SUPERIORITY

The question of air superiority must be answered in the affirmative prior to commitment of airpower to an attack. Without air superiority, the mission runs an unacceptable risk of failure. If the attack force is intercepted prior to their targets and eliminated, the mission not only fails, but may serve to embarrass the United States.

With air superiority, air operations are greatly facilitated. In El Dorado Canyon, the element of surprise and the F-18s and F-14s, as well as the suppression of enemy air defenses all contributed to air superiority. Even though the AAA threat was intense, air superiority allowed the fighters making their attacks to concentrate on only one threat, the AAA. The next priority for the aircrews was target destruction. If the SAMs had not been suppressed and the MiGs allowed to launch, several friendly fighters may have been lost.

Air superiority is rated high for the attack on the Syrian AAA sites, but still the Navy lost two aircraft. The primary lesson to be learned is air superiority may have a certain set of criteria attached, rules to be followed. Perhaps only "local" air superiority can be achieved over a specific geographical area. In this case, fighters wondering outside of this area may be subject to attack. The fighters shot down by SA-7s over Lebanon either allowed themselves to fly too low or too slowly or a combination of

both, resulting in the SA-7 operators achieving weapons parameters and successfully downing the jets.

In addition, the criteria for air superiority may have a time limit. The friendly fighters may only have a limited time on station available to maintain local air superiority due to fuel restrictions or the assessed capability of enemy fighters to respond in mass. Such a situation may force the attack package to ingress, attack and egress in a limited time frame, or risk enemy attack.

Whatever the limits on air superiority, they must be made clear to the pilots. As long as air superiority is achievable, even in a limited area or for a limited time, the attack will have the opportunity to complete the mission with less risk of engagement by enemy forces.

SURPRISE

During the *Mayaquez* incident, tactical surprise was most likely not achieved. The presence of U.S. P-3s, then the fighters overhead prior to the attack on the gunboats more than likely precluded tactical surprise. Strategic surprise may have been achieved on the leadership when the fighters actually attacked the gunboats, although most likely we will never know.

Without a doubt, the attack on the Syrian AAA sites did not have tactical or strategic surprise. More than likely, the pilots attacking the Khmer gunboats applied tactics as required to avoid the AAA and small arms threat

from the gunboats. Had the pilots been able to use the sun to their advantage by attacking with the sun at their backs, late in the afternoon, and kept outside of the SA-7s envelope, surprise may not have been required.

The tactical advantage achieved by the Israelis and the pilots of El Dorado Canyon resulted in the destruction of the assigned targets and minimal losses. Although the Israelis may have achieved strategic surprise over the PLO, the operation into Libya most likely did not. However, the tactical surprise on both missions allowed the pilots to attack and egress before the various air defense systems could react. The Libyans did not even launch one interceptor against the ingress or the egressing fighters.[1]

It is doubtful the United States will ever achieve both tactical and strategic surprise because of the process we employ to convince other states to alter their behavior. As the leader of the free world, our role is to first negotiate and use any diplomatic means available to resolve the problem. Failing diplomacy, economic pressure will most likely be brought to bear to influence the offending nation or group to alter their behavior. Only as a last resort will the U.S. employ military force to achieve the desired end state. This sequence of events will alert the offending nation for possible response from the U.S. military. Tactical surprise may still be achieved because the offending nation does not know precisely when or where the attack may occur. Deception may aid U.S. forces in

achieving tactical surprise, as may the use of decoys in the way of exercises or feints. The main point is surprise corresponds to tactical advantage for the forces conducting the attack and is an important ingredient for success.

RISK

The level of acceptable risk on a mission is a combination of all eight other factors, or the absence of them. The intricate relationship of intelligence to areas like the threat, air superiority, force structure required and surprise makes the risk for a given operation increase or decrease. If the end state of the operation is unclear or ill-defined, the risk of failure will increase because the force structure may not be appropriate for the threat, or the collateral damage may be unacceptable for the mission. Finally, risk in terms of available planning time, rehearsal opportunities, the amount of time until execution and specifically what time of day to attack, must be considered.

Risk is an overall feeling for the operation. The criteria listed above attempt to more closely define the elements of the mission so that risk can be evaluated in terms of those elements. By breaking the risk down into more quantifiable criteria, planners can account for lack of force structure if the threat is too high or make other adjustments to lower the risk prior to mission execution.

Although the risk to U.S. servicemen must be considered, it cannot be an overriding concern. The term "undue" risk is often used to describe the feeling that the risk of an operation is not justified by the desired goal in terms of the potential cost in lives to the military. The fact is, U.S. servicemen are paid to risk their lives if necessary to defend the nation from threats to the national interest. The risk to be avoided is the risk of failure of the mission. If the mission is well planned, with ample consideration for the criteria discussed herein, the chance for success will be high and the risk of failure comensurately low. The corollary is then that the risk to U.S. servicemen will also be low, not zero, but acceptable for the mission.

WHY STUDY TACTICAL FIGHTER OPERATIONS IN CO?

The United States has many military instruments to employ in times of war, and on other occasions short of war when the national leadership needs to defend our interests. The decision to use military power is at least as important as the decision on which military arm, or combination of services to use to accomplish the objective. This thesis attempts to study the employment of tactical fighters in contingency operations to determine if an optimum role exists. The answer is not only yes, but the result is a list of criteria for planners and decision makers to consider in determining if a given scenario calls for, or

can be serviced by tactical fighters. By identifying the conditions which maximize the potential effectiveness of tactical airpower, the optimum scenario is validated.

FUTURE AREAS FOR CONSIDERATION

A related question to the one answered here is, are there certain combined arms forces which are best for use in contingency operations or other forms of low intensity conflict? Could the use of Army aviation, for example, enhance USAF tactical fighter operations? The OH-58D is an extremely capable aircraft which can pass precise target data to fighters waiting to attack a target. Could the use of such resources supplement the intelligence available to enhance mission accomplishment?

In addition, what future capabilities could be used for tactical fighters to facilitate target destruction? A prime example is the Global Positioning Satellite system. Given the advertised accuracy of the system, the precise coordinates for attack on difficult to locate targets could be passed real time to the inbound fighters by SOF or other inserted teams. Again the impact on the required intelligence prior to launch of the mission would allow the fighters to continue to a specified point, and if the data is not forthcoming, return to base.

Tactical airpower is an excellent way to project massive combat power over long distances, accurately, against known targets. The use of tactical fighters implies a level of

commitment to the goals of the operation and a high level of seriousness on the part of the President and Congress. When the criteria for success are clearly defined, intelligence in the correct amounts and types available, time allotted for proper planning and rehearsal, and forces assigned according to the threat and target to be attacked; tactical fighters are an excellent way to accomplish certain national objectives.

Tactical airpower is not the answer in all instances. Fighters are not capable of seizing and securing terrain, only of preparing the battlefield for ground troops if such occupation is required. Also, fighter aircraft are a poor choice for hostage rescue and extraction; although providing cover for the extraction force is an essential function for tactical airpower. Finally, fighters are not ideally suited for showing the flag or maintaining a presence in a defined area. The deployment of a fighter wing is an expensive proposition which may send as strong message as a carrier battle group, but is less easy to extract when no longer needed and requires a host governments approval.

The advantages of tactical airpower are speed, firepower, self-protection and range. If a rapid, violent reaction to a threat is required, tactical fighters are ideally suited for the mission. From forward bases and from CONUS locations, tactical fighters can travel thousands of miles to strike targets as part of a strategic response or merely to send a strong signal. As a self-contained unit, a

fighter force armed with adequate intelligence is capable of defending itself from airborne and ground based threats.

The key ingredient for success is a well defined objective. When the objective is clear, intelligence resources can be focused, the threat well defined, forces assigned and packaged for maximum effect, surprise integrated into the plan and the overall risk held to a minimum. The result will be a successful operation, evoking pride from the participants, leadership and most of all, the people of the nation.

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